



**COBASYS**

# **Supplier Quality Manual**

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Prepared by  
Kirk Michael  
Supplier Quality Manager

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# I. Introduction

## Corporate Structure

COBASYS is committed to bringing advanced energy storage system solutions into widespread commercial production for transportation applications. Cobasys LLC is a wholly owned subsidiary of SB LiMotive

## Facilities

Cobasys has two facilities, the corporate headquarters and the advanced R&D facility is located in Orion, MI.

Production and assembly facility is in Springboro, OH.

The addresses are:

Headquarters:

3740 Lapeer Road South, Orion, Mi 48359

Main Phone: 248/620-5700

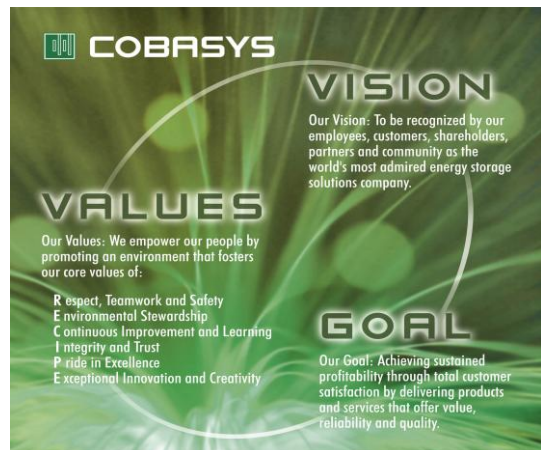
Main Fax: 248/620-5702

Manufacturing:

50 Ovonic Way, Springboro, Oh 45066

Main Phone: 937/743-1001

Main Fax: 937/743-1050



## Cobasys Quality Policy

Achieve total Customer satisfaction by meeting or exceeding Customer requirements, on time, the first time, every time. Use Customer feedback to guide continual improvement. Be guided by the principle of "Do it right the first time".

# II. Materials Management Requirements

## Labeling

Cobasys utilizes the standard AIAG B10 linear labeling system. The Supplier is required to use the same system for incoming labeling. Label size is 4X6in. Bar code font is Code128Text (see Appendix D). Failure to meet this requirement may result in the initiation of a CPAR.

For more specific requirements see "SMD-00002-1 Supplier Packaging Standard" available on <http://www.cobasys.com/>

## Packaging

Supplier must deliver goods in a package that is sturdy enough to guarantee protection of goods during transportation and the safe unloading by an operator. Supplier is responsible for contacting the Customer for feedback and to take all necessary actions to insure proper packaging.

For more specific requirements see "SMD-00002-1 Supplier Packaging Standard" available on <http://www.cobasys.com/>

## Pink Engineering Change Caution Labels

When an engineering change occurs, the Supplier must label all containers of the first lot with a pink engineering change caution label. A copy of this label is located in Appendix D. Please copy this label onto pink paper. This tag must also be used to identify the first lot of material manufactured using an approved process change.

## 100% On-Time Delivery

Cobasys requires 100% on-time delivery from its Suppliers as specified in the purchase order or release. Material Release Dates (MRD's) forecast and firm releases are available on the Cobasys Portal located <http://www.cobasys.com/portal/portal-connect.shtml>

## Supplier Performance Rating Reviews

Cobasys will perform delivery, quality and cost performance reviews on a regular basis. This review will be a part of the Suppliers score card and distributed to Suppliers on an individual basis.

## **Packing Slips**

A packing slip listing part numbers, revision levels, purchase order number, lot numbers, quantities, packing slip number and Supplier contact information is required. The packing slip must accompany all shipments.

## **Material Certification**

Material certification documents are required to be submitted as specified in your control plan.

Material certification documents can be provided as follows:

- Paper copy with each shipment
- Via e-mail prior to shipment
- Via fax prior to shipment

Failing to submit material certification documents as required may result in the initiation of a CPAR.

## **Certificate of Analysis**

Testing requirements are identified on the print. Certificate of Analysis documentation is required to be provided with Material certification documentation. Certificate of Analysis documentation must contain standard test method and/or performance standards utilized and the data collected.

Certificate of Analysis can be provided as follows:

- Paper copy with each shipment
- Via e-mail prior to shipment
- Via fax prior to shipment

Failing to submit certificate of analysis documents as documented in control plan may result in the initiation of a CPAR.

## **Certificate of Compliance**

If required by Cobasys SQE, Certificate of Compliance documentation supporting laboratory quality standard (ISO17025) is to be submitted with Certificate of Analysis

## **Sorting services**

In the event of a nonconforming shipment to the Cobasys manufacturing plant, immediate containment action by the Supplier is required. If it is determined by Cobasys manufacturing resident SQE and/or plant Quality Manager that a third-party sort is required, you will be directed to use approved sorting services and be financially responsible.

## **PPAP Submission and Approval**

Suppliers will follow the Production Process Approval process as required for all TS16949 registered companies. Each supplier must have at least one copy of the current AIAG PPAP book at your manufacturing location.

Your SQE will review and document specific product/process requirements with you prior to PPAP submission. Your Cobasys or SB LiMotive SQE will either provide you with the forms you need, or approve the use of yours at their discretion.

# III. Quality Expectations and Requirements

## APQP

The Supplier will utilize the AIAG Advanced Product Quality Planning (APQP) Process and will communicate and track status to program milestones as required by the program manager and communicated by a Cobasys buyer.

Suppliers will provide appropriate support for product development initiatives including MSA, DFMEA, PFMEA, process flow, control plans, lessons learned, etc. at Cobasys and Customer facilities.

Each Supplier is responsible for providing product to Cobasys at an incoming defective rate of zero (0) PPM.

Suppliers are responsible to analyze all warranty and quality issues using a root cause 5-Why, 8D or equivalent problem solving method.

If required, the Supplier is responsible for participating in Quality reviews with Cobasys management.

It is expected that 100% of the Suppliers' Data Universal Numbering System (DUNS) number, International Material Data Sheet (IMDS) and Production Part Approval Submissions (PPAP) will be on time and complete per the AIAG and Cobasys requirements as defined in this manual, and/or any other written agreement.

Suppliers must meet the following process capability requirements:  $Ppk \geq 1.33$  on all significant (special) characteristics prior to OEM SPECIFIC build, and  $Cpk \geq 1.67$  on all special characteristics at OEM SPECIFIC BUILD.

The Supplier is responsible for all laboratory testing as determined by the Supplier, Cobasys and/or the Customer. The testing results included in the Production Part Approval Process (PPAP) submissions must include the proper laboratory accreditation documentation.

## Special Characteristics (SC's)

SC's are print features that must be more closely monitored and controlled in the Supplier's process compared to other part features. All SC's must be identified on the Supplier's PPAP documentation. SC's will be defined on the Cobasys print. Control of an SC's will be reviewed in the APQP process with the team. These control methods are considered formally agreed upon when the Supplier receives full PPAP approval.

Occasionally, Cobasys or its Customer(s) may require that the Supplier submit more frequent capability studies or SPC data. Specific SCs may be identified on individual basis. If SC's are not specified, the Supplier is responsible for contacting the Cobasys SQE for direction prior to PPAP submission.

## **Customer-Owned Tooling and Gages**

Cobasys owned tools and gages must be clearly and permanently labeled as "Property of Cobasys" or our Customer as defined during PPAP approval. No tooling can be scrapped, altered, or moved without authorization from Cobasys. "Validation and verification of gage instructions" can be found in the Appendix E.

The Supplier is responsible for gage and check fixture design, fabrication, qualification and prove-out. Cobasys approval of the gage/check fixture strategy and design is required.

The Supplier is responsible for holding periodic gage/check fixture design/build reviews.

## **General PPAP Requirements**

The Supplier is responsible for Process Sign Off and Production Part Approval Process (PPAP) submissions and all associated activities and parts required for achieving Process Sign Off and Production Part Approval Process (PPAP) approval. Unless otherwise notified by a Supplier Quality Representative, an onsite Process Sign Off will be conducted prior to Supplier Production Part Approval Process (PPAP) submissions. PPAP requirements will be determined with your Cobasys SQE and documented on a PPAP checklist.

The Supplier is required to use a Design of Experiments (or equivalent) process to establish and optimize the production manufacturing process (demonstrated at Process-Sign-Off) that meets or exceeds quality and delivery requirements in the most efficient way possible.

The Supplier must maintain process parameters established during Process Sign Off. Any changes to the process will require resubmission of Process Sign Off/Supplier Production Part Approval Process (PPAP) submission.

The Supplier is responsible for on-going data collection and capability studies of special characteristics to be used as predictive indicators of the manufacturing process consistent with the product control plan.

PPAP approval from Cobasys does not constitute approval of immediate shipment of a new product or revision of parts. Once Supplier is provided PPAP approval, time is often required for Cobasys, to obtain approval from its Customer.

## **PPAP Requirements and Delivery**

All Cobasys Supplier PPAP submissions should be delivered to the assigned Cobasys SQE on or before their due date. Cobasys requires its Suppliers to follow the PPAP Checklist as defined by your SQE. A PPAP checklist must be used when preparing a PPAP package and included when submitted (if required by the Cobasys SQE) to ensure that all Cobasys PPAP requirements will be met. There may be requirements beyond the scope of ISO 9001:2000 and the AIAG PPAP manual due to a request from a Cobasys Customer.

Our Quality Department may issue to the Supplier a provisional/interim PPAP approval. A provisional PPAP approval is not a full PPAP approval; an interim PPAP approval allows a Supplier to ship product on request. However, the interim approval indicates a documentation update or some other corrective action is required. The Supplier must submit the missing documents or make corrections immediately or as required per the deadline given to them by the respective Quality contact.

The criterion for identifying critical Suppliers and determining PPAP levels includes the following and is also presented in graphical form below:

1. Potential/new Supplier without sufficient data to support different status.
2. Supplier has not developed a required quality management system (TS 16949).
3. Supplier continually delivers nonconforming products.
4. Your product is vital for the performance of the Cobasys energy system

Competence		Technology				RISK
Supplier aspects	Unknown supplier, supplier with significant problems in previous and/or current project	Changeover of whole manufacturing process to new technology	B	C	C	
	Known unapproved supplier, new parts, new conditions (organizational changes)	New process/ technology	A	B	C	C
	Production approved supplier with some problems	New equipment is to be used with proven process/technology	A	B	B	C
	Production approved supplier without any previous problems	Only proven process/technologies is to be used	A	A	B	C
A - Noncritical supplier		Comercial of the shelf parts (COTS)	Bulk material	Components	Complex components, assembly units	Technical knowledge
B - Potentially critical supplier		Simple parts, simple manufacturing process	Low complexity of manufacturing process that is contained at the supplier	Medium complexity of manufacturing process, multiple levels of a supply chain	High complexity of the process, various processes, multiple levels of a supply chain	Complexity of manufacturing process
C - Critical supplier		Parts aspects				

The Cobasys process to protect our product and our Customers is to develop a group of specific requirements and activities that will ensure control of production parts at Supplier sites.

Those activities are:

1. Level 5 PPAP submissions must be witnessed by a Cobasys SQE. Supplier will be responsible to regularly submit control plan special characteristics documents with shipments and/or as specified by your SQE.
2. If critical product characteristics are not currently specified on the part drawing, the Supplier is responsible to work with the Cobasys SQE and Design Responsible Engineer (DRE) to determine critical/special product characteristics that will be analyzed in the initial process capability study and included in the PPAP submission.

All new Suppliers are required to work with the Cobasys team to determine an initial visit and a Registration Audit. These activities will provide preliminary assessment of the Supplier's quality management system. A blank template of the current Registration Audit Form is available on <http://www.cobasys.com/>.

### **Cobasys Corporation Specific Instructions**

Unless superseded by specific written direction from Cobasys Purchasing and the Supplier Quality Engineer, the following instructions apply.

#### **PPAP Submission Level**

Level 3 shall be the default level for all initial submissions to Cobasys designed products.

Level 2 shall be the default level for all initial submissions for commercial off the shelf (COTS) parts.

Level 5 shall be the default level for submission of parts identified as critical and/or Suppliers identified as critical.

#### **Dimensional Results**

1. The Supplier shall report all dimensional results in the same unit of measurement as specified on the drawing.
2. PPAP samples shall be identified as master samples submitted for full layout inspection. If parts are made in a multi cavity tool, different cavities shall be identified.
3. Supplier shall include Cobasys drawing and the ballooned drawing with dimensional results.

#### **Sample Product**

The Supplier shall submit six (6) sample parts with 100% dimensional inspection, unless otherwise specified by SQE and/or a Cobasys Plant quality representative. Those parts must be clearly labeled and coordinated with reports. When destructive testing has to be performed to conduct 100% dimensional measurement, elements of the same sample must be clearly labeled.

#### **Material, Performance & Durability Test Results**

1. All laboratory data shall be less than one year old at the time of the initial submission.
2. All laboratory data shall be from an outside-accredited laboratory or the Supplier internal laboratory with a copy of their ISO17025 certification and internal Lab Scope included in the submission.
3. The Lab Test Report or the AIAG Test Report shall state the exact specification from the drawing.
4. The lab report and/or certification shall be verified for the conformance to the specification by the Supplier and include a stamp or handwritten evidence of this verification.

5. The Supplier shall report all results in the same unit of measurement as specified on the drawing or specification (i.e. material thickness in millimeters).

### **Control Plans**

The Supplier shall submit a pre-launch control plan along with the production control plan with all initial submissions in AIAG format per Cobasys requirements.

### **Capability Studies**

1. The Supplier shall submit an initial process capability study for all SC's as specified in control plan. Any exceptions shall require a signed documented agreement with Customer engineering and quality approvals.
2. The study shall be identified with the corresponding IPF number.

### **Measurement System Analysis**

1. The Supplier shall submit a Gage R&R study for all equipment used to perform the initial process capability study for the IPF characteristics. This includes measurement equipment, gages and fixtures. Gage R&R studies shall be performed on Cobasys parts.
2. The study shall be identified with the corresponding IPF number.

### **Run @ Rate Worksheet**

See Run @ Rate information on page 13.

### **Interim Status**

The Supplier shall submit an Interim Recovery Worksheet for any PPAP submission that is lacking any of the required documentation or any other issue that would prevent "full approval" PPAP status.

### **Restricted, Toxic, and Hazardous Substances**

Cobasys Suppliers must comply with all local, state, and federal laws and safety regulations regarding the use of restricted, toxic, and hazardous substances. Specific IMDS forms must be submitted online to the IMDS website prior to PPAP submission.

All Suppliers must submit IMDS to the Cobasys Company ID 51085. Submissions must be made under the Cobasys Part Number and following IMDS Recommendation 001 to ensure acceptance.

### **Payment for Production Tooling**

Unless otherwise agreed and documented in writing with your Cobasys buyer, invoices for production tooling will only be processed for payment if the Supplier has achieved full PPAP approval. Our standard payment terms will then apply, starting with the date of PPAP approval. Tooling for parts that have a provisional PPAP approval status will not be paid until the PPAP is fully approved or unless these three conditions apply:

1. Cobasys engineering department agrees to modify the print to agree with the exceptions in the Supplier's PPAP.
2. The print change cannot be made in a reasonable time period and the delay is caused by Cobasys or its Customer(s).
3. All other PPAP requirements are complete.

## **Tooling Timelines**

All Suppliers must submit a timeline to their Buyer via e-mail within 48 hours of receiving a PO for an engineering change and/or new tooling. Timelines must identify the steps and timing required to modify, build, and design tooling, PPAP timing, and the exhausting of old inventories. Timelines must be updated and submitted to the Buyer in accordance with a documented agreement. Timelines must be submitted for all process changes as well. Microsoft Project is the preferred format.

## **Process Changes**

All process changes must be approved by Cobasys Purchasing, the assigned SQE and Design Responsible Engineer (DRE) prior to implementation. Purchasing, SQE and DRE will review the request, approving or rejecting at their discretion. If a drawing change is required, the Engineering Change Order (ECO) process will start and the Supplier will await a new drawing before proceeding with the change. **In any circumstance, the Supplier must wait for approval from Cobasys before proceeding with any change.** Adequate notice must be provided prior to change of the process.

Complete PPAP Level 3 documentation is required as the reevaluation document for all Cobasys designed production parts. Complete level 2 PPAP may be required for the commercial off the shelf (COTS) parts and bulk materials. The Buyer will coordinate the PPAP and implementation of the approved change with the Supplier and affected the plant. The Supplier must submit a timeline to the Buyer detailing the timing required to make the process change (see Tooling Timelines).

## **Minority Sourcing**

Cobasys encourages and expects its Suppliers to purchase a portion of its materials and services from certified minority sources. These minority sources should be certified by the National Minority Business Development Council or its regional affiliates. If a Cobasys Supplier is a minority owned business, then the Supplier is required to:

- 1) Submit a copy of the certification to the Buyer, as well as
- 2) Complete the Minority Sourcing Profile from Cobasys.

## **TS-16949 Quality System Standard**

Cobasys requires its Suppliers to be certified to the TS-16949 or applicable quality system standard depending on the intended market. If the Supplier cannot achieve TS16949 certificate, minimum required compliance shall be

certification by an accredited certification body to ISO-9001:2000 with a plan for quality management system improvement.

Distributors are required to be minimally ISO 9001:2000 certified.

If the Supplier is ISO-9001:2000, TS-16949:2002 certified, then the Supplier must send a copy of its updated registration certificate to the designated Cobasys SQE on an annual basis or upon registration renewal. Cobasys manages its Suppliers to TS16949 standard compliance.

## **Containment**

If deemed a high risk component Supplier, new part PPAP packages must include a Containment/Pre-Launch Control Plan with enhanced inspection of parts at the Supplier facility, prior to shipment. Suppliers are required to remain in containment for a duration determined by the Cobasys or SBL SQE. This time period may be extended at the discretion of Cobasys' quality department. In individual cases, specific heightened levels of inspection activities will be required.

A full description of the Cobasys Containment and Controlled Shipping policies are located in appendixes B and D.

## **Run at Rate Information**

When required by Cobasys and/or SBL SQE, suppliers must submit a "run at rate" summary sheet with their PPAP submission. The Supplier is required to notify Cobasys prior to execution of the "run at rate" trial. Cobasys Purchasing and the SQE may visit the Supplier to view the run at rate.

**Corrective and Preventive Action Report (CPAR) /** In the event that a Supplier ships non-conforming material, the material will be rejected using our Corrective and Preventive Action Report (CPAR) system. The Quality department will notify your Quality contact via e-mail. The Supplier must submit an initial corrective action to the Cobasys SQE within 24 hours of receipt. The Supplier must then submit an 8-D, and Three legged five Why 3L5Y, corrective action report to the Cobasys SQE within seven (7) days. Sample of these documents are attached in Appendix F. The Supplier must include the identification of all potential root causes, mistake-proof techniques and revisions to the PFMEA, control plan, and process flow documents. It is at the Cobasys SQE discretion to request a Supplier visit for the evaluation of the effectiveness of the corrective actions.

## **Charge backs**

A Supplier's defect part may cause scrap, sorting, Cobasys Customer returns, and/or charge backs. These are all examples of the costs of poor quality. If it is determined that a Supplier's defective part(s) is the root cause of these additional costs of poor quality, then the Supplier may have their account debited to cover these costs. The debit amount will appear on the defective material notice (CPAR).

If component is found to be defective, Cobasys will return the material to the Supplier upon receipt of a returned material authorization number (RMA). However, Cobasys reserves the right to commence the rework or sort process, the cost of which will be charged back to the Supplier.

If the Supplier's defective material causes Cobasys to scrap built mechanisms, then the cost of these scrapped mechanisms may be debited from the Supplier's next payment.

If the Supplier's defective material causes Cobasys' Customer to scrap or rework, then the cost of the scrap or rework may be debited from the Supplier's next payment.

If the Supplier's defective material causes Cobasys' Customer to issue a debit to Cobasys, then this amount may be debited from the Supplier's next payment. This includes the costs of sorts conducted by Cobasys' Customer at their location and any fines they impose.

If Cobasys personnel are required to travel to a Customer facility due to a quality issue resulting from the Supplier's defective material, then all travel expenses relating to the trip and problem resolution may be debited from the Supplier's next payment.

The examples above are not all inclusive. Cobasys reserves the right to debit all costs resulting from one of its Suppliers providing defective material, including premium freight.

The Supplier has the right to appeal a debit to their Cobasys buyer. Final determination will be at the sole discretion of Cobasys Purchasing.

## **On-Site Review of Problem Solving Methods**

Suppliers are required to complete and submit a 3L5Y and 8-D root cause analysis in the corrective action report (or other Cobasys SQE approved formal problem-solving formats) to the SQE for each defective material notice (CPAR). Additionally, Suppliers may be required to present and review their documents with the Cobasys management team on site at Cobasys.

The number of CPAR's issued to a Supplier per month, severity of the occurrences and Supplier responsiveness will be the criteria used to determine if a Supplier must participate in the reviews and if they will be categorized as a critical Supplier.

Reviews will be held at least monthly and Suppliers must appear in person at Cobasys. Cobasys will notify the Supplier's Plant Manager and Sales contact if the Supplier is required to be present at a CPAR Meeting. Supplier representatives at these meetings must have the technical and operational knowledge required to answer and explain the details of the corrective action reports.

## **Cobasys Specific PPAP Requirements and Checklist**

A copy of our PPAP checklist is shown in "Appendix A." A Cobasys or SBL SQE will use this checklist to define PPAP requirements based on your product and our perceived risk. AIAG PPAP forms are to be used to support PPAP requirements. Suppliers may be allowed to use their forms at the discretion of your Cobasys or SBL SQE.



# Appendix B

## Cobasys Containment Policy

**Containment** is required during the pilot and launch phases or for the first product produced in a new program. The Supplier shall increase inspection / verification of their product / process for SC's (at a minimum) to ensure any nonconformance will be identified and necessary actions are taken at their facility before shipment to Cobasys. These controls shall be identified in the pre-production control plan or equivalent and shall be determined by the Supplier unless current controls are not sufficient to insulate Cobasys from the receipt of nonconforming product. The Supplier shall modify the containment in place providing evidence that all of the Cobasys' requirements have been met and there are no open concerns. However, if non-conformances still exist, specific portions of the containment defined by the Cobasys' SQE shall be kept in place until the proper controls have been implemented.

**Containment** is also required when a CPAR has been issued for a product concern to assure that a quality management system is established. The Supplier shall implement effective controls to contain the problem at their facility. This would include all inventories at Cobasys facility, the Supplier's facility and any product in transit. The Supplier shall determine these controls per heightened levels of inspection requirements specified in the appendix C.

### **Sort Policy**

During containment, the primary urgent objective is to quickly identify and segregate all suspect material without interrupting production. Where sorting is required, all Suppliers' personnel shall be properly trained to perform the sort, have any necessary gages, as well as have and wear appropriate personal safety protection.

In the event that a sort is required within Cobasys's production facility walls, Supplier's sort personnel shall be supervised by the Supplier designate and will not be the responsibility of Cobasys. Cobasys can only allow for sorting at our facility when the circumstances may lead to shutting down a production line.

**Identification** of product that is in containment shall utilize a certification label / sticker identifying the reason/nature for the containment. The label / sticker shall be signed by a management designee and will indicate that the product therein has been inspected to be 100% defect free. Identification labels must be in compliance with the Cobasys PO requirements and must include, at a minimum, part number, quantity, PO number and date shipped. Cobasys may reject shipments received without the proper identification (green dot signed by production manager).

## Controlled Shipping

### 6.1 General

Controlled Shipping is a demand by the Customer that a Supplier put in place a redundant inspection process to sort for a specific nonconformance, while implementing a root-cause problem solving process. The redundant inspection is in addition to normal controls. The data obtained from the redundant inspection process is critical as both a measure of the effectiveness of the secondary inspection process and the corrective actions taken to eliminate the initial nonconformance.

A 3<sup>rd</sup> party or a Customer representative will perform audits. The data obtained from the 3<sup>rd</sup> party redundant inspection process, as well as the audits, are critical as both are a measure of the effectiveness of the secondary inspection process and the corrective actions taken to eliminate the initial nonconformance.

In special cases, Controlled Shipping - Level 2 inspection may be required to be performed outside the Supplier's facilities at a facility deemed appropriate by the Customer.

Note: The term "SQE" in Controlled Shipping refers to the Supplier Quality Engineer, Quality Systems Engineer, CS Coordinator, 3<sup>rd</sup> Party Provider Quality Engineer, or other approved Customer Representative.

**Controlled Shipping Level I (CS1)** is required when the Supplier's current controls have not proven sufficient to insulate Cobasys from the receipt of nonconforming product, Cobasys has been placed in CS1 due to a defect of the Supplier's product or the nonconformance is a safety concern.

The Supplier shall implement a redundant inspection process at the Supplier's facility and submit a containment plan with the CS1 confirmation reply.

Controlled Shipping - Level 1 includes a problem solving process as well as a redundant inspection process. The Supplier's employees at the Supplier's location perform the inspection process in order to isolate the Customer from receipt of nonconforming parts/material.

**Controlled Shipping Level 2 (CS2)** is required when the Supplier's CS1 current controls have not proven sufficient to insulate Cobasys from the receipt of nonconforming product. The Supplier is responsible to promptly inform Cobasys of CS2 status. The Supplier shall add inspection performed by an impartial third party to inspect product prior to shipment. The Supplier shall be required to attend a meeting at Cobasys to present containment actions and root cause analysis with the CS2 confirmation reply. CS2 status shall automatically place the Supplier on *New Business Hold*.

Controlled Shipping - Level 2 includes the same processes as Controlled Shipping - Level 1, with an added inspection process by a third party representing the Customer's interests specific to the containment activity. The third party is selected by the Supplier, approved by the Customer, and paid for by the Supplier. Suppliers may select the third party from an approved listing maintained by the Customer.

# Appendix C

## Safe Launch early production containment -Heightened levels of inspection Requirements

Early production containment is to be used for all pre-production, production, service and accessory part requirements that;

- 1.1 Require Production Part Approval Process (PPAP) approval
- 1.2 Represent significant risk to the Customer facility as mandated by the Customer

### 2.0 DEFINITION AND PURPOSE

Early Production Containment requires a Pre-Launch Control Plan that is a **significant** enhancement to the Supplier's production control plan and raises the confidence level to ensure that all products shipped will meet Customer's requirements. The pre-launch control plan will also serve to validate the production control plan. The Pre-Launch Control Plan should take into consideration all known critical conditions of the part as well as potential areas of concern identified during PPAP.

The purpose is to:

1. Validate the Supplier's production control plan.
2. Protect our assembly and manufacturing centers and service part warehouses from quality non-conformances during critical periods.
3. Document the Supplier's efforts to verify control of its processes during start-up, acceleration, after revisions to the manufacturing process, or when manufacturing runs are separated by 3 months or more.
4. Ensure that any quality issues that may arise are quickly identified, contained, and corrected at the Supplier's location.
5. Increase involvement and visibility of Supplier's top management.

### 3.0 SUPPLIER RESPONSIBILITY:

The Supplier shall:

- A. Validation Process: Establish a validation process that contains the following elements:
  1. Identify the staff person responsible for ensuring the development and implementation of the verification process.

2. Implement early production containment with entry date, exit criteria, and exit date as defined by the Customer.
  3. Establish early production containment stations, which must be off-line, separate, and an independent check from the normal manufacturing process and located at end of process. Additional, or when more effective, in process containment stations may be utilized and must be documented and approved by the Customer/Supplier Quality Engineer (SQE).
  4. Identify additional inspections, testing, and dimensional checks required at the heightened levels of inspection containment station based on Key Product Characteristics (KPCs), Part Quality Characteristics (PQCs), high RPN and/or issues identified during product and process development.
  5. Train personnel relative to the standardized work performed at the heightened level containment stations.
  6. Establish a reaction plan for a single defect.
  7. Implement an audit process of the early production containment utilizing levels of management (layered audit), including site leadership, to insure conformance to the Pre-Launch Control Plan.
  8. Include subcontractor (Tier 2) in the validation process.
- B. Plan Development: Development of a Pre-Launch Control Plan which is a significant enhancement to the production control plan and also consisting of additional controls, inspections, audits, and testing to insure conformance and capability of the manufacturing process. The plan needs to consider;
1. Increased frequency/sample size as stated in the Production Control Plan.
  2. Verification of packaging and label requirements – including service and accessory part requirements, which may include country of origin labels on parts.
  3. Verification of the effectiveness of error proofing.
  4. Immediate implementation of containment and irreversible corrective action when non-conformances are discovered in the heightened level of inspection containment area or at the receiving location.
- C. Documentation: Document the Pre-Launch Control Plan using the Control Plan format referenced in the AIAG Advanced Product Quality Planning and Control Plan Reference Manual or other Customer approved Advanced Quality Planning reference manuals. The Pre-Launch Control Plan is not a substitute for the Production Control Plan but, is an addition to the Production Control Plan and is used to validate it.
1. Document additional inspections, functional testing, and dimensional checks required at the heightened level of inspection containment

station or in process check stations on the Control Plan Special Characteristics form referenced in the AIAG APQP Manual – Supplement K and reference said document in the Pre-launch Control Plan as a specific operation.

2. Document inspection work instruction for the early production containment station to insure standardized work.
  3. Document evidence of execution and validation of the control plan in a format agreed upon by the Customer. The data must be readily available for review by the Customer/SQE.
  4. Document problem solving for both internal and Customer quality concerns utilizing a Customer acceptable format; including problem description, root cause, irreversible corrective action with break points and update FMEAS and Control Plans as appropriate. The 3 Legged 5 Why (3L5Y) analysis for root cause to apply lessons learned is to be utilized.
- D. Duration of heightened level of inspection: Heightened level of inspection must be implemented for a period of time or quantity of parts as specified by the Customer or until the Production Control Plan has been validated, whichever is longer. If time or quantity is not specified, heightened level of inspection will remain in effect through acceleration or a minimum of 2 weeks, whichever is longer.

Heightened level of inspection is mandatory for 100% of all parts required through the heightened level of inspection period. Based on documented acceptable performance, which includes no issues identified at early production containment or by the Customer, the Customer/SQE may approve a reduction of the 100% inspection requirements after manufacturing validation builds by the Customer. This must be documented and approved by the Customer/SQE.

Additional measurement and testing requirements must be identified by the Supplier and/or Customer/SQE and approved by the Customer/SQE.

Again, for manufacturing validation builds, 100% inspection is a minimal requirement. Exit criteria noted below.

- E. Identification: To indicate compliance with the early production containment requirements, attach to each shipping label a green circular, sticker, approximately 25mm in diameter, signed by the staff person accountable to insure proper implementation of heightened level of inspection.

#### **4.0 EXIT CRITERIA:**

Supplier will be eligible to exit heightened level of inspection after validating the effectiveness of the Process Control Plan and meeting the criteria listed below. If the Supplier is unable to meet the exit criteria or the Supplier's early production

containment plan continues to identify non-conformances the Supplier shall continue the necessary containment measures to insulate the Customer until the quality concerns have been resolved to the satisfaction of both the Supplier and the Customer and the Supplier's Production Control Plan is validated.

- A. Ship the number of pieces required to meet production requirements as specified by the Customer for the heightened level of inspection period with no problems identified in early production containment or by the Customer. If time or quantity is not specified, the period of time is through acceleration or 2 weeks, whichever is longer.
- B. If a problem is identified in heightened level of inspection or by the Customer, early production containment must remain in effect for a minimum of 2 weeks after implementation of corrective action or through the original early production containment period, whichever is longer.
- C. If the early production containment plan continues to identify non-conformances, the heightened level of inspection plan must be kept in place until process controls and capabilities have proven effective and the Production Control Plan is validated.

#### **5.0 CONSEQUENCES OF SHIPPING NONCONFORMING MATERIAL**

- A. Failure to execute heightened level of inspection may result in Controlled Shipping Level 2 (CS2) by third party auditor and other possible consequences.
- B. Shipment of non-conforming material may result in Controlled Shipping Level 2.

## **Appendix D**

### **Pink Engineering Change Caution Label**

**THE MATERIAL IN THIS  
CONTAINER IS THE FIRST LOT  
OF A NEW REVISION LEVEL!**

# Packaging Label Example

Part Description :

Left Case Halves

---

Part No. ( P ) : 1000320



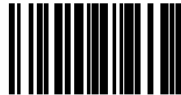
---

Revision Level ( 2P ) : A



---

Quantity ( Q ) : 25



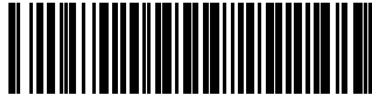
---

Lot Code ( 1P ) : 3212235465



---

Manufactured Date ( 2D ) : 12-05-05



---

Purchase Order No. ( K ) : 12342



---

Ship From :

Acme Springs Company  
1 Lane Drive  
Toledo, Ohio  
77889

---

Ship To :

Cobasys  
50 Ovonic Way  
Springboro, Ohio  
45066

# Component Part label Requirements

Cobasys Mfg engineering

Rev: 29Nov2011

Part Number: XXXXXXXX

Rev Level: XX

Serial Number: XXXXXXXX

DMC

## Notes:

1. Reference AIAG B-17, 2-D Direct Parts Marking Guide
2. Black print on white label
3. Label size: Negotiable Vendor to recommend (ref page 15, AIAG B-17 Manual for number of characters for given symbol size)
4. Font size – Human readable, negotiable vendor to recommend
5. DMC should have the following criteria embedded within the code.
6. Field 1: 7 digit COBASYS Part Number (Human Readable)
7. Field 2: 2 digit - COBASYS Rev. Level (Human Readable)
8. Field 3: tbd digit - Unique Supplier Traceability / Serial Number (Human Readable),
9. Vendor to provide recommendation on supplier unique traceability/serial number based on their specific process.
10. All 3 pieces of information shall be separated by a comma (CSV – comma separated variable)
11. Use ECC200 error correction level
12. Example of DMC embedded data
13. P1007974,2PA,1T100651110121  
\*Red highlights data identifier.
14. P = Data identifier to indicate part number follows, (will always be P)
15. 1007974 = Cobasys part number
16. , = comma to indicate new field of data
17. 2P = Data identifier to indicate Revision (will always be 2P)
18. , = comma to indicate new field of data
19. 1T = Data identifier to indicate serial number (will always be 1T)
- 20.100651110121 = vendor traceability / serial number

# Appendix E

## VALIDATION AND VERIFICATION OF GAGES

### **PURPOSE**

The purpose is to define the minimum Supplier requirements for using specified gages to determine acceptance of Cobasys product.

### **SCOPE**

This requirement will cover all dedicated gages, fixed gages, functional gages, check masters, set masters, and any reference standards that are used to confirm and/or satisfy Cobasys critical product requirements and/or the Supplier's in-process checks. This may also include in-process gauging and automated (in-line) gages.

Standard gauging such as micrometers, multi-meters, etc. that are used to perform various functions are not directly included in this requirement, except when they are used with the above gages or standards as part of a defined test.

However, these standard gages, excluded from this process, remain subject to the requirements defined by the Automotive Industry Action Group (AIAG) in the Measurement System Analysis (MSA) reference manual.

### **DEFINITIONS**

Reference Standard: A reference standard is any gage, artifact, or material that is used to adjust, check, set, or calibrate a measurement instrument or measurement process. This includes master gages, set masters, check masters, and certified masters. It may also be an input into a measurement process (such as a power source for a gage requiring a specified voltage). For the purpose of this document, all masters will be included and referred to as reference standards.

Dedicated Gage: measurement instrument designed, identified, and used to check or verify one particular part (or family of parts). The check or verification may involve more than one characteristic.

Functional Gage: measurement system that mimics or duplicates the designed purpose and/or assembly of a component or another subassembly purchased by Cobasys.

Results may be either attribute or variable types.

Traceability: Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated measurement uncertainties.

Calibration: The set of operations which establish, under specified conditions, the relationship between values indicated by a measuring instrument or measuring system, or values represented by a material measure, and the corresponding values of a measurement.

Calibration shall assure that measurements, and/or the verification and validation of equipment are traceable, wherever possible, to NIST or other National Measurement Institute (NMI). Calibration certificates, where applicable, shall indicate the traceability to an NMI or intrinsic

standard, the measurement result and the associated uncertainty of the measurement and/or a statement of compliance with an identified metrological specification.

Accredited Laboratory: A laboratory that has been accredited to ISO/IEC 17025 and/or, in some cases, ANSI/NCSL Z540-2. This accreditation will be by an authoritative body (AB) that is recognized as a signatory of the Asia Pacific Laboratory Accreditation Cooperation (APLAC) MRA (Mutual Recognition Agreement) and/or the International Laboratory Accreditation Cooperation (ILAC) MRA.

Notes - APLAC is a regional accreditation cooperation within ILAC and a specialist regional body with Asia Pacific Economic Cooperation (APEC). In the U.S.A., acceptable accrediting bodies are L-A-B, A2LA, ACLASS, & NVLAP. Worldwide, ILAC MRA signatories represent over 40 countries and over 50 accreditation bodies.

Unbroken chain of comparisons: Complete, explicitly described, and documented series of comparisons that successively link the value and uncertainty of the result of a measurement with the values and uncertainties of each of the intermediate reference standards and the highest reference standard to which traceability for the result of measurement is claimed.

## **GENERAL REQUIREMENTS**

As early in the development process as possible, the Cobasys Supplier Quality Engineer (SQE) in collaboration with Cobasys Dimensional Engineer is to approve:

1. Gage concept
2. Gage design
3. Measurement System Analysis (MSA) Plan. This plan, to maintain the quality of the test, may include, but not be limited to:
  - a. Work or test instructions,
  - b. The type of study along with its parameters for gage qualification (for example, a Gage Repeatability and Reproducibility Study or measurement uncertainty analysis,)
  - c. Calibration schedule,
  - d. Result verification
  - e. Intermediate checks
  - f. Maintenance schedules

Prior to being placed in service, the Supplier will submit the results from the plan to the Cobasys SQE. Approval by the SQE will be required prior to gage use.

## **IDENTIFICATION OF GAGES AND REFERENCE STANDARDS**

All gages and reference standards used to accept Cobasys product will have its calibration status clearly identified. When a fixture or gage has multiple output devices and/or input devices, they may be tagged either individually or as the complete gage. Calibration and verification records, along with any other documentation must support either case.

In the case of gages and reference standards that are used exclusively to test Cobasys product, they will be labeled with the appropriate Cobasys part number, revision level, and description.

When these gages and/or reference standards are the property of Cobasys, they will be labeled as "Property of Cobasys." All the requirements of Section 19 of Cobasys' Special Terms and Conditions for Production Components will apply. This document is available from the Cobasys purchasing department or from the Cobasys website.

## **REFERENCE STANDARDS & MASTERS**

Prior to use, reference standards will be calibrated, verified or otherwise certified at specified intervals, per the Cobasys requirements listed in the definition section of this document. This includes the use of accredited calibration laboratories. Standards shall not be used if the calibration status is "past due."

When using a reference standard as a comparison check, set master, or input device, there must be a documented tolerance for acceptance of the gage for use.

When a master is actually a component (or "golden part"), it will be considered a reference standard. All relevant characteristics will be certified and/or calibrated by an accredited laboratory prior to use.

The Supplier shall confirm that the reference standard or master suits the intended purpose as it relates to the acceptance or rejection of product.

## **GAGES**

Gages will be calibrated, verified or otherwise certified at specified intervals. Before it is placed in service, the gage will have been subject to an appropriate gage evaluation or MSA and approved by the Cobasys SQE. Requirements for acceptance of the gage evaluation and/or MSA will be supplied to the Supplier by the SQE. Repetition of gage evaluation studies shall be scheduled at least yearly. The gage evaluation study will also be repeated after any gage repair.

Work instructions or test methods shall be readily available at the location of gage use.

Intermediate checks and gage maintenance will be performed at specific intervals according to documented instructions. Where intermediate checks, maintenance, or adjustment require the use of reference standards, the identification of the standard will be part of the instruction and/or records.

Should the gage be found to be out of specification at any time, the Supplier will assess and record the validity of previous tests and take appropriate action, including, if necessary, recall of product.

Periodically, results of calibrations, adjustments and intermediate checks will be reviewed and analyzed by the Supplier to determine stability, drift, and effectiveness of the gage program.

# Appendix F

CPAR #	CPAR Date	Part Name	Part Number	Nonconformance	Description of Nonconformance

Why 1	Why 2	Why 3	Why 4	Why 5	Root Cause	Therefore Check	ECD	Corrective Action / Error Proofing	Turn On Turn Off Check	FMEA Update	Follow up Verification
Leg One: How was the problem created?											
Leg Two: How was it missed?											
Leg Three: How did it slip out of the system?											

**Other Products Affected and Corrected:**

**Lessons Learned:**

**COBRASYS** Problem Solving Sheet

**1** Problem Description:

Plant/Dept./Workshop	Notes, Photos
User/Station	
Product/Component	
Date, line	
Shift	
Employee	
Team/Leader	

**2** Factor Analysis

Description	The problem is	The problem is not
What exactly is the problem?		
Where exactly does the problem occur?		
When exactly did the problem occur?		
How often did the problem occur?		

**3** Containment

No.	Containment Action (prevent problem from passing on)	Responsible	Date / Time	Status
1				⊕
2				⊕

**4** Data Analysis

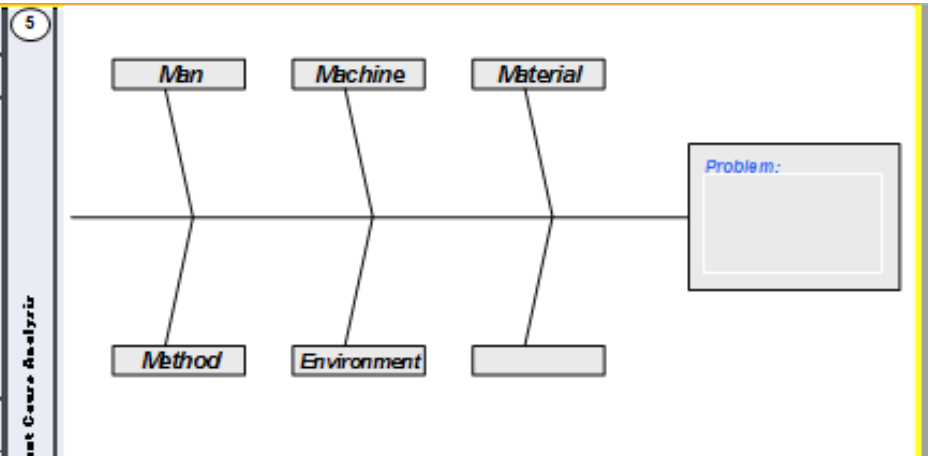
Background for problem

Supporting Info (Process Performance Data)

**7** Effectiveness Analysis

Notes

Supporting Info (Process Performance Data)



**Root Cause Analysis**

1	2	3
Why?	Why?	Why?
Why?	Why?	Why?
Why?	Why?	Why?
Why?	Why?	Why?
Why?	Why?	Why?

**6** Corrective Action

No.	Root cause	Action	Responsible	Date	Status
1					⊕
2					⊕
3					⊕
4					⊕
5					⊕

**8** Standardization

	Resp.	Date	Yakulis (Liveness learned passed on)	Resp.	Date
QR-Matrix (Final)					
P-FMEA					
POP (Control Plan)					
Standards					
Drawings					
Processes					

**9**