



Century Inc., Supplier Quality Requirements

INTRODUCTION

Welcome to Century

Century, Inc. is a privately held, vertically integrated precision manufacturing company headquartered in Traverse City, Michigan and serving customers worldwide. The company is comprised of two separate business units on our 13-acre campus: Century Specialties which provides Precision Machining and Century Sun servicing the Heat-Treating industry.

Employing an APQP quality framework and cellular manufacturing concepts, coupled with state-of-the-art CNC machines and digitally monitored heat treating equipment, the end products from Century are produced to the highest quality standards. This unique vertical integration of our precision machining operation and world class heat treat facility allows for the exchange of operational resources, single source accountability, and ultimately value to our customers.

Century, Inc. is ISO 9001 registered and AS9100, NADCAP and ITAR Certified.

Purpose

In today's manufacturing environment, product that is found to be non-conforming at receiving, or during production, causes serious disruptions of the production and shipping schedules, resulting in high production costs. Even the best Receiving Inspection program cannot detect all defective material. Century requires suppliers to control the quality of services and material shipped to Century Inc.

This manual describes Century Inc.'s expectations for its suppliers to ensure that purchased material and services meet Century requirements. If there are any exceptions of applicability, the supplier shall provide in writing the request to depart from or exclude the section that they are not maintaining.

Scope

This document is complementary to the Century Inc. Non-Disclosure Agreement or other Non-Disclosure Agreements and Terms and Conditions in place between Century, Inc and the Supplier.

This Agreement outlines the mutual expectations between the Supplier and Century regarding product quality, lines of communication, expectations to resolve quality problems, change control and development activities. It also applies to Century's outsourced partners or subsidiaries. Acceptance of a Purchase Order binds the Supplier to the requirements listed in this document, the agreed upon Terms and Conditions and the listed requirements of the Purchase Order.

Century Inc.'s Quality Policy

Our Mission:
Dedicated to customer satisfaction
the first time and every time

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1.0 Quality Management System Requirements

Each Century supplier is required to maintain an effective quality management system, preferably one that conforms to ISO 9001 Quality Management System (QMS) – Requirements. The QMS shall be robust enough to ensure product conformity, adequate training and competence, and proper notification of nonconforming material.

If the supplier is processing or servicing aerospace product, suppliers QMS shall meet the requirements of AS9100, prevent the use counterfeit parts or materials, and shall ensure that persons within the supplier's organization are aware of:

- Their contribution to product or service conformity;
- Their contribution to product safety;
- The importance of ethical behavior.

In addition, the supplier must meet all other requirements of this manual.

1.1 Quality Manual and Procedures

Supplier shall have a quality plan and/or quality system manual that defines the elements of the Quality System relevant to the design, development and/or manufacture of the product, and shall establish how the quality requirements shall be met.

The supplier, as requested, will provide a copy of their Quality Manual and supporting procedures. This includes detailed documents and work instructions specific to production of material for Century.

1.2 Control of Sub-tier Suppliers

Suppliers are responsible for the quality of materials and components provided by their sub-tier suppliers and sub-contractors. Century suppliers must impose controls on their sub-tier suppliers that provide quality results and documentation comparable to the controls applied to suppliers by Century. The extent of the controls may vary, depending on the nature and complexity of the product and processes, but should normally include:

- Evaluation and qualification of sub-tier supplier facilities
- Control to ensure that raw materials used meet Century's requirements
- Controls to ensure that the sub-tier suppliers used are those approved by Century or Century's customers where applicable.
- Part qualification, including first article inspection and process capability studies of as applicable.
- Control of drawings/revisions
- Control of nonconforming material
- Corrective action process
- Risk mitigation process

Where appropriate, Century may specify the sub-tier suppliers that may be used, evaluate and qualify the sub-tier supplier's facilities, and assist the supplier in controlling the sub-tier supplier. Typically, this occurs when the sub-tier supplier is an essential component of the supply-chain process. *Century reserves the right to evaluate the quality system and records of such sub-tier suppliers as necessary. In the event of Century's involvement, it does not absolve suppliers of the ultimate responsibility for the quality performance of their sub-tier suppliers.*

2.0 Supplier Qualification Process

All suppliers of production materials and services to Century must be qualified suppliers. The extent of the qualification process is dependent upon the criticality of product purchased and other factors determined by Century. The qualification process may include:

- A quality management system self-assessment completed by the supplier, using the Century supplier assessment survey form.
- An on-site assessment by Century personnel or their authorized agents.
- Designated approved by Century's customer.

2.1 New Supplier Self Assessment

When a new supplier is being considered, they are sent a quality management system self-assessment survey form. The supplier completes the self-assessment and returns it along with any requested supporting documents.

If any issues are found, Century will work with the supplier to determine if the necessary requirements can be met.

2.2 On-Site Assessment

An on-site assessment of the supplier's facility may be performed. The on-site assessment may include the following components:

- A quality assessment to determine whether the supplier's quality management system is in place and functioning effectively.
- A business assessment to determine whether the supplier has financial resources, production capacity, and other business resources needed to maintain Century's production needs.

2.3 Periodic Reevaluation- Right of access

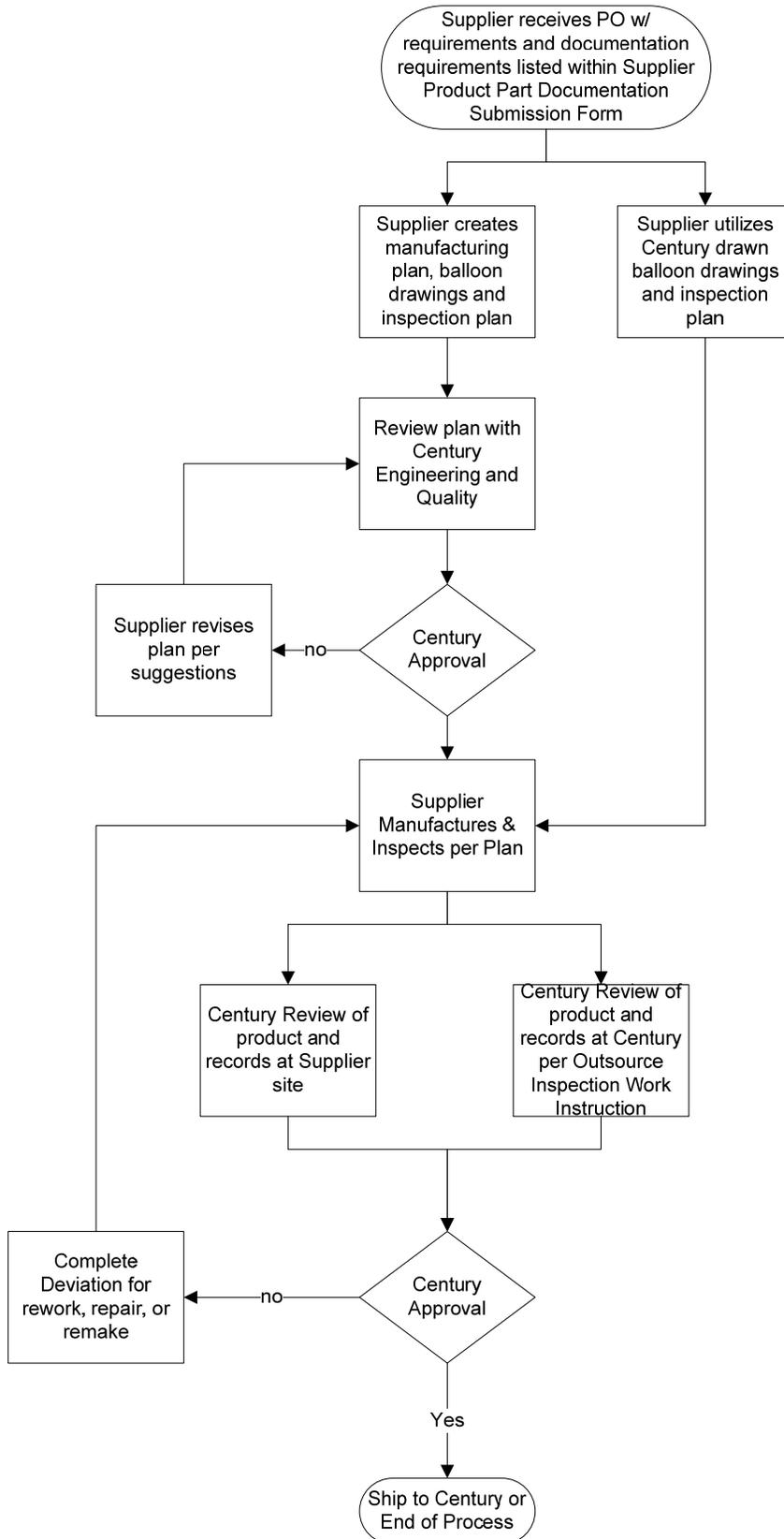
Century periodically reevaluates current production suppliers using performance data, on-time delivery and/or on-site assessments. If requested, the supplier shall make their facility available for on-site process verification by Century personnel, with reasonable notice.

Periodically, Century may audit the supplier's quality management system. The supplier must make their facility available for on-site process verification by Century personnel at any time, with reasonable notice. This may be a full or abbreviated documentation and on-site audit. The purpose is to evaluate any changes that may have occurred in the supplier's quality management system, and to assess the supplier's continuing commitment to quality improvement.

The supplier shall allow Century the right of access by the organization, their customer, and regulatory authorities to the applicable areas of the facilities and to applicable documented information, at any level of the supply change.

3.0 Part Qualification

3.1 Flowchart for Outsource Machining Operations



3.2 Control or Inspection Planning

When requested, the supplier must develop a control and/or inspection plan and submit it for approval. The control plan and is a detailed description of the supplier's proposed processing steps required to produce the part, and the controls that are put into place to control the quality at each step. The control plan must include all manufacturing steps of in-house processing, external processing, inspection, packaging, and shipping. Suppliers may use their own format. Measuring devices and fixtures designed and built to check Century's parts must be identified with a gage number and must be listed on the control plan if part specific.

The control/inspection plan must include all critical characteristics. Where detailed instructions are required, the supplier details those instructions in a work instruction, or equivalent, which must be listed in the control plan. Inspection methods, sample sizes, and sampling frequencies should be based on the process capabilities, seriousness and likelihood of potential non-conformances, and process stability. Critical characteristics must be inspected 100%, unless otherwise approved.

Century will review the Supplier's inspection planning for approval prior to Production unless Century provided.

3.3 Dimensional Inspection/ Process Test Report

The supplier inspects or tests each part/sample for dimensions, drawing notes, and specification requirements listed on the current revision of the Century drawing and/or specification or provided inspection plan.

The dimensional inspection/ process test report must include the specification number, specified requirements, and results. Each report must be traceable to the supplier's material, through lot/heat/coil/batch numbers or equivalent and must be signed by the organization that performed the testing. For any requirements that the supplier does not have the equipment to inspect or test, the supplier may obtain reports from their sub-supplier or other test agency.

The supplier is responsible for submitting all Inspection data requested.

Where possible, all inspection plans & reports should be submitted in electronic format (preferably Adobe Acrobat or Microsoft Office).

In some cases Century personnel may wish to be present during the initial production run. This will allow Century to validate and verify the process before any product is shipped.

The minimum quantity for the production run is agreed upon between the supplier and Century. The parts must be produced under volume-production conditions, including material, machines, tooling, processing parameters, cycle times, etc. Any exceptions to the volume-production conditions must be approved in writing by Century and included in the data package submitted to Century.

3.4 Certificate of Compliance

The supplier must provide a certification of compliance. As determined by Century the certification may include the specification number, specified material and/or physical requirements, the inspection/test results, and a statement of pass or fail. Each report must be traceable to the supplier's material and must be signed by the organization that performed the testing

3.5 Record Retention

Supplier shall retain all applicable records pertaining to processing Century material for a minimum of 10 years for non-Aerospace product. Aerospace product records must be retained for life of product plus 10 years. Contact Century for specific requirements.

Century shall be notified prior to disposal of any aerospace records pertaining to processing Century material and given the option to take ownership of records.

4.0 Manufacturing Control

Century suppliers are required to control all manufacturing processes in accordance with the control plan, which is approved during part qualification.

Once control plan has been established as Frozen it may not be deviated without approval from Century's quality department.

4.1 Nonconforming Product

Supplier shall establish and maintain procedures to control nonconforming product. The procedures shall address the identification, documentation, evaluation, segregation, and disposition of nonconforming product, including a determination of a need for an investigation, which shall be documented.

Nonconforming product found at Century may be returned to Supplier for investigation and analysis through an RMA process. Supplier is responsible for analyzing material, investigating its own processes, and reporting results to Century within the timeframe requested.

Supplier shall replace such nonconforming product free of charge. In the event of a rejection of nonconforming product, Supplier shall replace product as soon as possible.

A supplier is never permitted to knowingly ship product that deviates from the print, specification limits, or design intent without written authorization from Century. If such a condition exists, the supplier may request Century to allow shipment of the product. This is accomplished by initiating a Deviation Request. Method of request must be in writing (e.g. email, form, letter). Supplier can use FO 8.5-11S located within the Appendix for communicating deviations.

If directed by Century, the supplier must send tagged samples of non-conforming items to Century for evaluation. The cost of any testing required to determine the acceptability of the product will be charged to the supplier. Century will determine the item's acceptability and if corrective actions are required beyond the deviation. If approved, Century will send a written deviation approval to the supplier.

The deviation is only intended to be an interim action and **is not** to be construed as an engineering change. The supplier must begin work immediately to correct the condition in question. This must be accomplished within the time frame stated on the deviation. Failure to comply with the mutually agreed upon closure date for the deviation may result in the supplier's rating being affected.

Any parts sent to Century that have been approved on a Deviation must be clearly identified on the box, container, or other packaging method with the appropriate markings decided jointly by Century and the supplier.

4.2 Identification

The supplier shall ensure that product is identified during all stages of receipt, production, handling, storage and shipping/distribution while product is in their control. The supplier shall have a means of identifying the manufacturing status of the product while in their control.

4.3 Traceability

Supplier shall be responsible for setting up and maintaining controlled documentation of product traceability during all stages of receipt, production and shipping/distribution. Records and documentation must remain legible, readily identifiable and retrievable. Changes to records and documents must be identifiable. Traceability and quality records shall be maintained for a minimum of ten years. All products and components are traced by lot/batch at a minimum. Each shipment shall include a manifest that identifies at a minimum:

- Purchase order reference
- The Supplier Manufacturing #
- Quantity released
- Product part/model number
- Revision of product/part/model number

If applicable:

- Lot controlled product –The list of serial numbers included in the shipment.
- Quantity released
- Process information traced to all levels of manufacture. At a minimum, this includes operator performing the operation and date performed.
- Raw material traced to original material manufacturing lot/batch.

4.4 Workmanship

When workmanship standards are not referenced on drawings or specifications, the supplier is expected to follow industry-accepted standards (e.g. ANSI, IPC). When in doubt, consult with Century for clarification.

4.5 Safety

At no time should any customer, or person at a Century facility, be exposed to hazardous material or situations that are not inherent in a component's structure. Residues, films, out-gassing products and packaging materials should comply with OSHA (Occupational Safety & Health Association) standards. For items with inherent hazards, safety notices must be clearly observable.

5.0 Drawings/Specification Changes

5.1 Drawing/Specification and Change Control

The supplier must have a documented system for assuring that the latest Century drawings and specifications are in effect at their facility. The supplier's quality management system must contain a documented procedure that describes the method used for the receipt, review, distribution, and implementation of all changes to drawings and specifications. In addition, the procedure must address control of obsolete drawings and specifications. A documented procedure should also detail the method used to contain new or modified parts until approved by the customer.

5.2 Process Changes, Engineering Changes

Suppliers must have systems in place to control changes to drawings, specifications, processes, or produced parts. Systems should be capable of handling changes being requested by the customer, and changes requested by the supplier.

NOTE: The Production Planning approval process is directed at a given part number for a specified revision level produced in a specific area of the manufacturer's facility. **Suppliers may not make any changes in their process, location, critical suppliers, material, or to the part without written approval from Century.** The supplier must formally request a process change on all Century components.

6.0 Packaging & Labeling

6.1 Packaging

Each supplier must adequately plan for packaging. Century encourages supplier-initiated packaging improvements. Suppliers will provide packaging that provides protection from any damage that may occur. Packaging, labeling, and shipping materials must comply with the requirements of common carriers, in a manner to secure the lowest transportation costs.

Whenever possible, only one-part number and one supplier lot is to be packaged in a shipping container. When more than one-part number or lot number is packaged in a shipping container, each part number and/or lot number must be separately packaged (i.e. bags or boxes) inside the container, with each labeled as to the contents.

6.2 Labeling

Each shipping container or inside package must contain the following information:

- Century part number (if no Century number exists, supplier part number is used)
- Quantity
- Supplier's Name
- Purchase Order Number
- Lot identification (if required)
- **Any Century or Century customer designation such as Critical Part or Flight safety part.**

7.0 Corrective Action System and Supplier Monitoring

7.1 Corrective Action System

Century requires suppliers to utilize a closed-loop corrective action system when problems are encountered in their manufacturing facility, or after nonconforming product has been shipped to Century.

Century issues a Corrective Action Request (CAR) to a supplier when non-conforming parts are found at Century or a Century customer. They can also be issued because of a supplier audit. Corrective Action Report may be in either Century's format or suppliers

The following provides a brief outline of the CAR procedure that suppliers to Century should comply with:

- Century requires that the supplier take immediate containment action upon notification of the nonconformance. The supplier must submit a written response to Century, reporting the Supplier's initial observation and defining the interim containment plan within 48 hours of notification.
- The containment plan must clearly define the containment actions at the supplier's facility to assure that no nonconforming product is shipped to Century. If suspect product has already been shipped, the supplier must address all suspect stock in transit and any stock at Century. The supplier will assist Century in identifying customer risk by identifying all suspect lot numbers and associated quantities involved.
- Within 3 weeks after the original notification, the supplier is expected to report the results of the Supplier's investigation into the cause of the problem, corrective action, and any action taken to prevent recurrence of the problem with the effectivity date (the date the corrective action will be implemented).
- The supplier is required to keep Century informed of progress towards implementing the corrective action. When corrective action implementation is complete, the supplier will verify that the corrective action is effective in preventing the problem's recurrence.

8.0 Appendix – Specification for Purchased Steel

8.1 PR 7.4-6 rev 0.

	Material Type						Processing Method	
	M-1	M-2	M-7	D-2	A-8	AISI 4150	Swiss Turn	
Steel is to be supplied in an annealed condition	X	X	X	X	X	X		
Types A,B,C, and D nonmetallic inclusions should rate no higher than 1 ½ using ASTM E45-81 Method D	X	X	X	X	X	X		
All material shall meet or exceed the ASTM A 600 or ASTM A 681 straightness tolerances or the international equivalent	X	X	X	X	X	X		
Steel will have a decarb free surface and have full carbon to the OD. The surface of the steel will be free of cracks, laps, seams, soft & hard spots, and dents.	X	X	X	X	X	X		
Bars are never to be cut to length with an abrasive cut off saw.	X	X	X	X	X	X		
The steel will be re-melted by electro slag re-melt or vacuum arc remelt	X	X*	X		X			
+/- 0.0005 dia on grind; 0.0005" TIR roundness							X	
Straightness - 0.50 mm/1 m							X	
Chamfered ends 60 deg							X	
One end of bar to be sawn (sheared ends create bar feed issues)							X	

* for z-rolls

DOCUMENT REVISION HISTORY

Document No.	Rev	By	Date	Approval	Description of Revision(s)
QP 7.1.5	0	NM	3/25/18	MB	New document.
QP 7.1.5	1	KLE	5/7/19	MB	Updated to reflect outsourcing of machining operations, addition of Specification of Purchased Material, and forms required by Machining Outsource operations.