

Quality System Standard Operating Procedure 3-OF-04182

Revision: 3

TITLE

ICS SUPPLIER PROCESS CHANGE NOTIFICATION (PCN)

Stakeholder(s):

Purchasing
Product Family Leader
Quality Assurance

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PURPOSE

This specification covers the Process Change Notification requirements for Suppliers on Purchase Orders (POs) or Blanket Contracts originating in ICS (Industrial Control Systems) Plants, not Woodward in its entirety. An itemized list of plants and plant numbers can be found in Appendix-A of this document.

REFERENCES

Reference documents:

WPQR-9100
WPQR-9102
SP-1128
SP-896
SP-1201
DOC-9
4-OF-04187

WISE Screens:

None

APPLICABLE SITES

Colorado
India
Tianjin
Suzhou
Campinas
Greenville
Hoofddorp
Krakow
Aken
Stuttgart



Kempen
Kempen-PS
Japan

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1.0 PROCESS INTENT AND APPLICABILITY

The Woodward supply base is responsible to meet the requirements of the change control process as defined within this document.

NOTES:

- 1.1 This specification does **NOT** encompass supplier initiated design / engineering changes (i.e., dimensional/tolerance changes, alternate material changes, deviation of flow down requirements, etc.).
- 1.2 This specification does **NOT** replace other Woodward documents assigned on the drawing or purchase order (PO).
- 1.3 This specification does **NOT** encompass process changes to catalog items or items manufactured to a published industry standard.
- 1.4 Changes to Special Processes could be subject to additional requirements as defined in DOC-9, "Engineering Controlled Special Processes".
DOC-9 defines SPECIAL PROCESSES as, "manufacturing operations whose performance is vital to the proper function of the product but whose results cannot be fully verified except by destructive testing".
Some examples of Special Processes include, but are not limited to, non-mechanical (non-conventional) machining processes (e.g. EDM, laser cutting, etc.); surface coating/treatment (anodizing, plating, etc.); thermal (heat) treatment; joining processes (brazing, welding, etc.); non-destructive testing; special material requirements. Refer to DOC-9 for additional details.

2.0 ACRONYMS

AVL	- Approved Vendor List (also referred to as ASL – Approved Supplier List)
CMM	- Coordinate Measuring Machine
MSA	- Measurement System Analysis
PCN	- Process Change Notification
PCV	- Process Change Validation
PO	- Purchase Order
PPAP	- Production Part Approval Process
PSW	- Part Submission Warrant
SM	- (Purchasing / CoE) Supplier Manager; supplier change submission recipient
SQE	- Woodward Supplier Quality Engineer

3.0 DOCUMENT REQUIREMENTS

IMPORTANT: IN APPROVING A PROCESS CHANGE NOTIFICATION (PCN) FROM A SUPPLIER, WOODWARD ACKNOWLEDGES THAT THE CHANGE REQUEST AND VALIDATION PLAN APPEAR TO BE REASONABLE. THE SUPPLIER RETAINS THE RESPONSIBILITY TO VALIDATE THAT THE CHANGE WILL NOT ADVERSELY AFFECT THE PRODUCT'S FORM, FIT, OR FUNCTION.

NOTE: If a supplier implements process changes before Woodward approves the PCN submission, ***then any parts produced are at the supplier's own risk including costs associated with a non-conformance (stop ship, field activities, etc).*** The supplier **MUST** ensure uninterrupted delivery of product to Woodward under the former process should the proposed process change get rejected.

3.1 Structure and Management of Process Changes

Suppliers shall have a formal documented system to validate changes to process plans where:

- 1) All changes are documented.
- 2) All changes are clearly defined.
- 3) All changes are approved by appropriate supplier personnel.
- 4) All changes are validated (see Section 3.1.1).
- 5) A method exists for Woodward notification and approval when required per the process change category tables below (see Section 3.2).
- 6) All changes shall be planned and executed to manage assurance of supply to Woodward.

3.1.1 Process Change Validation (PCV)

Regardless of category, **ALL** process changes require **Process Change Validation (PCV)** by the supplier. All changes are to be fully-evaluated to ensure that there will not be any unexpected or adverse effects on the product or service delivered to Woodward.

NOTE: Woodward and/or Woodward's customers may require additional validation testing at the assembly/sub-assembly level, which must be discussed with Woodward in order to mitigate potential timing and parts supply issues.

Process Change Validation requirements defined by:

Process Inputs		Process Outputs
Proposed Supplier change:		Supplier shall check / validate the impact to the process for:
Materials, machines, tooling, fixtures, source of supply, programming, etc.	Production process	Feature conformance, specification compliance, feature locations, dimensions, part characteristics, inspection methods, gage capability, part cleanliness, material properties, etc.

Note: Per 3.1, item 1 - process change records are an auditable quality record.

Woodward reserves the right to require a PPAP submission for any process change or in the case where no prior PPAP was provided to Woodward.

3.1.2 Process Change Notification (PCN)

As directed within the process change category tables (see Section 3.2), suppliers shall notify Woodward of process changes using the Supplier Process Change Notification (PCN) Form (4-OF-04187). **Supplier PCN submissions shall be directed to the appropriate Woodward contact listed on the supplier e-Business portal as defined below.**

- **CAT-1, CAT-2, or CAT-3: Woodward Supplier Quality Engineer (SQE)**
- **CAT-4: Submittal not required, unless deemed appropriate or if unsure about category and/or submittal requirement.**

NOTE: Woodward is expected to acknowledge receipt of the PCN back to the supplier, and to make every reasonable effort to complete it in a timely manner.

3.1.3 Impact on PPAP content

Woodward specification WPQR-9102 covers the PPAP system. In situations where a process change has an impact on the approved PPAP, the supplier shall update the PPAP. PPAP submittal requirements depend on the scope of the change. At a minimum, list a description of the change on the PSW form and send it with copies of the PPAP elements directly affected by the change. PPAP submissions shall be directed to the Woodward SQE.

3.2 Types and Categories of Changes - When determining the appropriate change category start with Category-1 and work top-down through tables 3.2.1 – 3.2.4 on the following pages.

Contact your Woodward-assigned SQE if you are uncertain about which category a change belongs in, or if there is any question as to whether or not a Process Change Notification is required for a process change not listed in the tables below.

3.2.1 Category-1 Changes -

Suppliers are required to obtain Woodward approval of changes ***before*** they are implemented. Woodward needs to manage and protect the ability to deliver products to Woodward customers. Woodward reserves the right to participate in Category-1 Process Change Validation activities.

Fixed / Frozen parts or processes will be communicated to the supplier by the Woodward PO and/or as indicated on the drawing.

Item numbers identified as part of a Fixed / Frozen process have been selected by Woodward based on customer requirements and/or the nature of having a high impact on product performance.

Change Category	Change Type	Description / Example	Supplier Required Submission/Activity
Category-1	Location change of manufacturing, assembly or testing of product	<ul style="list-style-type: none"> - Moving the plant from one business address to another. - Moving a cell, department, or portion of a PPAP approved manufacturing operation / process to another business address. <p>(i.e., deciding that an entire manufacturing process no longer makes sense to be performed in-house: <u>heat treat</u> or <u>plating line</u> - moving out-of-house to a subcontractor or another division of the parent company; <u>machining</u> - moving all the lathe work out to a subcontractor or another division of the parent company.)</p>	<ul style="list-style-type: none"> • PCV REQUIRED per 3.1.1 and project plan. • Notification via PCN per 3.1.2 AND Woodward approval of PCN is required prior to implementation for ANY Category-1 change.
	Woodward Fixed / Frozen Process	<ul style="list-style-type: none"> - Can be any manufacturing, assembly or test process (including equipment changes). - Are typically selected from the output of Design or Process Failure Modes and Effects Analysis (FMEA) - May be a requirement driven by Woodward's customer that must be flowed down / enforced. <p>(Fixed / Frozen process designations default to a Category-1 & override all other change categories.)</p>	<ul style="list-style-type: none"> • Supplier PPAP updated per 3.1.3 for Woodward review / approval per WPQR-9102 prior to shipment. • *See DOC-9 for Special Process change requirements as referenced in paragraph 1.4 above.
	Critical Items	<ul style="list-style-type: none"> - Items designated by Woodward as critical and identified on the print/drawing or on the Purchase Order. Also includes Critical Safety Items (CSI's) per Woodward document SP-1201. 	<ul style="list-style-type: none"> • Elimination of any process step shall be communicated as a Category-1, -2, or -3 change request, whichever is appropriate.
	Controlled Attributes	<ul style="list-style-type: none"> - Items with controlled attribute sheets for controlled characteristics, processes, sequence of operations, source control, or subcontracted work per SP-1201. 	

3.2.2 Category-2 Changes -

Suppliers are required to notify Woodward and obtain approval of changes prior to shipment, as indicated in the following table.

Change Category	Change Type	Description / Example	Supplier Required Submission/Activity
Category-2	Source change (Including Source Change of a Special Process)	<ul style="list-style-type: none"> - Change of purchased location / manufacturing source of Woodward or customer designed parts, products,-and/or services after initial PPAP qualification (e.g., sub-supplier manufacturing source change that is not constrained by a Woodward AVL). - Use of approved Woodward sources may be required per WPQR-9100 (i.e., changing from one Woodward approved source to another Woodward approved source). 	<ul style="list-style-type: none"> • PCV REQUIRED per 3.1.1. • Notification via PCN per 3.1.2 for Woodward review AND approval prior to shipment of parts for ANY Category-2 change. • Supplier PPAP updated per 3.1.3 for Woodward review / approval per WPQR-9102 prior to shipment. • *See DOC-9 for Special Process change requirements as referenced in paragraph 1.4 above. • Elimination of any process step shall be communicated as a Category-1, -2, or -3 change request, whichever is appropriate.
	Source Change of supplier design parts/products	<ul style="list-style-type: none"> - Change in source of a component listed on the bill of materials for a supplier-designed product. 	
	Fundamental manufacturing technology change	<ul style="list-style-type: none"> - Friction weld instead of bolted together. - Wave solder instead of hand solder. - Conventional to non-conventional metal working (e.g., Stamping to laser cut or water jet). - Physical deburr to chemical deburr. - Manual to automated coil winding. 	
	Assembly or Test method change	<ul style="list-style-type: none"> - Fluid leak test to air leak test. - Elimination of a test. - Manual test to automated test. 	
	Tooling change to precision moldings or casting parts <i>(When specified on the PO or drawing, casting processes and tooling are controlled by SP-1128.)</i>	<ul style="list-style-type: none"> - Applies to new or modified tooling, dies, molds, patterns, etc. for precision moldings and castings. <p>(e.g., replacing a die due to wear.)</p>	
	Manufacturing process change for casted or molded parts	<ul style="list-style-type: none"> - Molded part resin drying/cure time, part dwell time, etc. - Changes in gate/riser location (must be validated taking into account the impact to fixturing). 	
	Woodward defined keys	<ul style="list-style-type: none"> - Items with key feature(s) identified on the print, on the Purchase Order, or in the keys database. Also includes Key Characteristics (KC's) per SP-1201. 	
	Software change	<ul style="list-style-type: none"> - Changes in embedded product software, firmware, or boot code. 	

3.2.3 Category-3 Changes –

Suppliers are required to notify Woodward and obtain Woodward SQE approval of changes prior to shipment of parts, as indicated in the following table.

Change Category	Change Type	Description / Example	Supplier Required Submission/Activity
Category-3	Manufacturing method change	<ul style="list-style-type: none"> - Drill and ream operation changed to drill and bore; or any number of machining options. - Manual Lathe turn work and vertical machining for cross holes changed to CNC lathe with driven secondary tooling. - Changes required to use an alternate size or form of raw material controlled by the same specification. 	<ul style="list-style-type: none"> • PCV <u>REQUIRED</u> per 3.1.1. • Notification via PCN per 3.1.2 for Woodward review AND approval prior to shipment of parts for ANY Category-3 change • Supplier PPAP updated per 3.1.3 and retained by supplier for submittal on request. <p>(NOTE: Category-3 PPAP updates involving Woodward defined key features would elevate the Supplier PCN to a Category-2 change.)</p> <ul style="list-style-type: none"> • *See DOC 9 for Special Process change requirements as referenced in paragraph 1.4 above. • Elimination of any process step shall be communicated as a Category-1, -2, or -3 change request, whichever is appropriate.
	Control Plan/Inspection Plan change	<ul style="list-style-type: none"> - Change in type of inspection equipment may require gage validation per 4.1.3 (e.g., when changing from a CMM to an optical comparator part tolerances and MSA shall be considered). 	
	Replaced or Modified manufacturing tooling (<i>Does not include perishable tooling.</i>)	<ul style="list-style-type: none"> - Applies to new or modified manufacturing tooling or fixturing (<i>includes additional or replacement tooling</i>). 	
	Tooling/Equipment arrangement change	<ul style="list-style-type: none"> - Tooling/equipment moves or layout adjustments within supplier shop (same business address). 	
	Tooling/Equipment overhaul or retrofit	<ul style="list-style-type: none"> - Overhaul or refurbishment means the tear down, repair, and rebuild of equipment; may also include retrofits and performance improvements. 	
	Capacity Management and Machine Offload	<ul style="list-style-type: none"> - Temporary movement of a manufacturing process to another like machine to meet a schedule due to down machine or backlog at a specific machine. See WPQR-9100 section 7.5.1.4 on Work Transfer. <p><u>Caution</u> - if change involves a Special Process, *Doc 9 would apply (e.g., cannot switch a small diameter drill operation to a sinker EDM without prior Woodward approval).</p>	
	Business System Changes	<ul style="list-style-type: none"> - MRP and/or ERP change(s) (PPAP requirement does not apply) 	

3.2.4 Category-4 Changes –

As with all categories of change, suppliers are required to validate changes for Category-4 items, as indicated in the following table. Woodward notification is not required, unless deemed appropriate by the supplier or if unsure of submittal requirement.

Change Category	Change Type	Description / Example	Supplier Required Submission/Activity
Category-4	Regular administrative shop management activities	- Administrative changes associated with regular shop management activities (e.g., department or machine numbering, 5S or preventive maintenance programs, lean activities, etc.).	<ul style="list-style-type: none"> • PCV REQUIRED per 3.1.1.
	Quality System change – no compliance impact	- Administrative changes or adjustments within supplier's quality system that do not impact compliance (e.g., calibration cycles, training frequency, etc.).	

Note: Routine Tool replacement and process adjustments that are managed through the defined control plan are not considered process changes. PCN NOT required.

APPENDIX-A (Affected ICS Plants/Locations)

Any PO and/or blanket order originating in any of the following plants is/are subject to the requirements of this specification (also noted in the PURPOSE section above).

Plant Number	Plant Location
04	Colorado (US)
12	Greenville (US)
40	Hoofddorp (The Netherlands)
44	Gloucester (England)
45	Krakow (Poland)
47	Aken (Germany)
50	Stuttgart (Germany)
53	Kempen (Germany)
54	Kempen (Power Solutions)
65	Makuhari (Japan)
70	Ballabgrah (India)
71	Tianjin (China)
74	Suzhou (China)
75	Campinas/Sao Paulo (Brazil)

REVISION RECORD

Effective Date	Revision Level	Approval	Description
04-Dec-2017	1	John Stencil	<ul style="list-style-type: none"> • Initial release.
07-Dec-2017	2	John Stencil	<ul style="list-style-type: none"> • PURPOSE: added reference to APPENDIX-A for list of ICS plants/locations affected. • REFERENCES: Added doc number 4-OF-04187 • APPLICABLE SITES: Added sites in addition to Colorado. • Page 5: Added copy of supplier notification letter. • Para 2.0: start of renumbering all paragraphs, including paragraph by paragraph cross-references. • APPENDIX-A added • REVISION RECORD: Removed paragraph number; corrected Revision-1 "effective date".
20-Dec-2018	3	John Stencil	<ul style="list-style-type: none"> • Removed introductory page defining effective date for previous revision and introductory page that included letter to suppliers from ICS Quality. • Para 3.2: Relocated/reworded statement from 3.2.4 regarding category uncertainty.