

Xylem Inc.

Supplier Quality Manual



xylem
Let's Solve Water



Under the Xylem Supplier Quality Program, we are deploying our new Supplier Quality Manual.

At Xylem we recognize the very important role our Suppliers have in the value we offer our Customers. Products and Services from Suppliers contribute strongly to the high quality products and services we offer, and our customers expect and deserve quality that is unparalleled.

We are committed to establish and develop long term partnerships with our Suppliers and to establish with our Suppliers a common, sustainable growth.

The purpose of this Supplier Quality Manual is to describe Xylem's standard approach toward supplier quality. Its's primary purpose is to communicate to our Suppliers the minimum requirements necessary to assure the quality of supplied products and services, both to our factories and our customer's sites, meet or exceed our Customer's expectations.

A handwritten signature in black ink that reads "Tony Milando". The signature is written in a cursive, flowing style.

Tony Milando

Senior Vice President, Continuous Improvement & Business Transformation

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1. Introduction

1.1 List of Abbreviations, Acronyms, Definitions & Terms

Approved Supplier List	Identifies the group of Suppliers Xylem has approved to supply a given commodity segment. The approval process of these Suppliers is based on thorough analysis of the Supplier's capability to consistently meet requirements including quality.
Cpk	Process Capability Index. Adjustment of Process Capability for the effect of non-centered distribution.
CTQ	Critical to Quality. The key measurable characteristics of a product or process whose performance standards or specification limits must be met in order to satisfy Xylem's customer.
Containment	Action taken to minimize the risk and impact to Xylem or its customers associated with a non-conformance. Containment actions can be focused on the product/service in which the non-conformance is suspected or identified as well as focused on similar products or product families in which the non-conformance may occur.
Corrective Action	Action to eliminate the cause(s) of an existing non-conformance and prevent recurrence.
NCR	Non-Conformance Report. Document issued by Xylem to capture identified non conformances.
PPAP	The industry standard for defining the production part approval process to ensure engineering design record and specification requirements are consistently met.
8 Disciplines	The Eight Disciplines of Problem Solving (8D) is a problem solving methodology designed to find the root cause of a problem, devise a short-term fix and implement a long-term solution to prevent recurring problems.
Preventive Action	Action to eliminate the potential or actual cause(s) of a non-conformance and avoid future occurrence.
Repair	Action performed on a product to rectify the non-conformance so that the product meets requirements for its intended purpose (meets functional or appearance requirements).
Rework	A type of correction performed to a non-conformance that completely eliminates the nonconformance(s) such that the product is determined to be conforming to specification or requirement.
Replacement	Action performed to replace with a new product which meets all requirements.
Scrap	A disposition for non-conforming product that is not useable for its intended purpose and that cannot be economically reworked or repaired in an acceptable manner.
Supplier Deviation Request	A request initiated by the Supplier to request approval to deviate from a specific requirement following a suspected or identified product non-conformance.
XGP	Xylem Global Procurement

1.2 Objective and Scope

The objective of this manual is to unify Xylem supplier requirements and core expectations in a single document. By sharing this manual with our Suppliers, we hope to both thoroughly educate our Suppliers and build the foundation for successful and transparent relations.

The scope of this manual extends to all Xylem's Suppliers and their Sub-Suppliers. The requirements contained in this manual do not supersede or replace any contractual terms & conditions and associated legal requirement/regulation applicable under any contract or agreement (including any drawing, specification and process), which will apply and prevail if more stringent. Implementation of quality requirements shall not grant suppliers additional rights (including to use / own intellectual property rights, claim for additional costs and/or extension of time), such rights being solely governed by relevant contractual terms & conditions under applicable contracts or agreements.

1.3 Supplier Integrity

Suppliers must be ethical in their relationship with Xylem, which includes protecting Xylem's confidential information and intellectual property. Xylem fosters a culture of anti-bribery and anti-corruption and embeds procedures to prevent bribery and corruption by employees. A complimentary code of ethics is expected from parties interacting with Xylem and appropriate measures must be adopted to comply with applicable agencies.

2. General Supplier Requirements

2.1 Language

English is Xylem's preferred language. Local languages will be permitted, if agreed upon with Xylem.

2.2 Quality Management System Requirements

The Supplier shall maintain a documented quality system to ensure control and conformance to Xylem's quality requirements and the requirements of its customers. Xylem expects that its Suppliers have effectively implemented a quality management system in compliance to ISO9001:2015 standard, or equivalent.

2.3 Restricted Substances and Product Safety

All materials supplied shall satisfy applicable governmental and Xylem constraints on restricted and toxic materials; along with environmental, electrical and electromagnetic considerations. The Supplier shall have a process to ensure that purchased products and relevant manufacturing processes comply with these restricted and toxic substance requirements.

2.4 Customs and Export Control

The Supplier shall notify Xylem about any items (goods, software, technology) supplied to Xylem that are subject to export controls under any laws and local regulation of the United States of America, European Union or any other countries. This includes goods derived from controlled technology, or software co-mingled with controlled software. The Supplier will provide country of origin information or certification in a manner that meets import requirements at destination. The Supplier will also provide documentation requirements for Xylem, including but not limited to: issuing certificates of origin, origin determination, preferential origin calculation, etc.

2.5 Conflict Minerals

Xylem expects its Suppliers to fully comply to The Xylem Conflict Minerals Policy. The Xylem Conflict Minerals Policy is accessible in the Xylem webpage <https://www.xylem.com/en-us/about-xylem/conflict-minerals-policy-statement/>

2.6 Environment, Health & Safety

The Supplier shall comply with all applicable Environment, Health & Safety regulations.

Xylem expects that its Suppliers have an active engagement in environmental concerns. Evidence of this commitment may include the establishment, and adherence to an environmental management system such as ISO 14001 latest standard or equivalent.

Xylem expects that its Suppliers have a system for managing health, safety and promoting safe work environments by providing a framework that allows the organization to consistently identify and control risks related to health and safety, reduce potential accidents, support policy enforcement and improve overall performance. Compliance with OHSAS 18001 is the preferred.

2.7 Control of Sub-Suppliers

The Supplier is responsible for ensuring the Xylem Supplier Quality Manual, applicable procedures and product/ service documentation and subsequent changes are relayed to Sub-Suppliers. If a Supplier chooses to outsource a process, the Supplier shall inform Xylem and is fully responsible for qualification and surveillance of all Sub-Suppliers to Xylem requirements.

2.8 Risk Management

The Supplier shall establish a risk management process to effectively assess and control elements of the business that could negatively affect the quality of the products, services and delivery to Xylem.

2.9 Business Continuity

The Supplier shall have a business continuity plan containing contingency plans to satisfy Xylem's production and quality requirements in the event of significant or repeated utility interruptions, labor shortages, equipment failure, field returns or natural disasters. The plan should also allow for the safeguarding, storage and recovery of documentation pertaining to any contract including but not limited to: engineering drawings, electronic media, and production tooling in the event of damage or loss of product. The Supplier's Business Continuity Plan shall be periodically reviewed, updated and shared with Xylem upon request.

2.10 Record Storage & Retrieval

The Supplier is responsible for record storage and retrieval in compliance with requirements shared and agreed upon with Xylem. Relevant production/process records defined during the qualification process must be available for a minimum of 5 years or as defined by Xylem.

2.11 Xylem Owned Fixtures/Tooling/Equipment

The Supplier shall have a documented process for the handling and treatment of consigned fixtures, tools, and equipment utilized for Xylem products. The Supplier shall immediately notify Xylem if the fixture/tool/equipment is lost, damaged, unsuitable for use, or moved to a different manufacturing facility. The fixture/tool/equipment maintenance and servicing must be traceable back to the manufacturer recommendations and records made available for audit by Xylem.

2.12 Packaging, Labels, Storage Shelf life

All requirements about packaging, labels, and storage shelf life shall be reviewed and agreed upon with Xylem. The Supplier shall work with Xylem to reduce the impact of packaging waste. The Supplier shall use First-In-First-Out (FIFO) methodology to manage their physical inventory.

Date Sensitive Materials / Obsolescence Management System

The Supplier shall not ship date sensitive materials older than 20% of the manufacturer's shelf life as defined by and agreed upon with Xylem. Suppliers must indicate if shelf life control must be applied on a shipped part or material (such as: varnish, paint material, coating material, resins, some sensitive electronic like electrolytic capacitors, etc.).

3. Supplier Qualification

3.1 Approved Supplier

Suppliers are approved by Xylem Global/Regional Procurement services and/or Xylem site Sourcing teams for designated categories and/or processes. Suppliers will be added to the Xylem Approved Supplier List when they demonstrate compliance to Xylem business criteria and quality requirements.

3.2 Supplier Self-Assessment

General information may be collected from the supplier for initial screening using the Self-Assessment Survey; if requested the assessment must be filled out in full. Supplier assessments may be requested for new and existing suppliers based on approval status and ongoing performance.

3.3 Supplier Quality Audit

An on-site quality audit may be conducted at the supplier site to qualify the Supplier. Xylem, its affiliates, and Xylem customers reserve the right to perform audits and/or inspections at suppliers' facilities and/or suppliers' subcontractors' facilities in order to:

- Examine all pertinent documents, data and other information relating to Xylem products, tooling or any Xylem purchase order.
- View any facility or process relating to Xylem products or any Xylem purchase order.
- Audit any facility or process to determine compliance with the requirements of any Xylem purchase order.
- Perform Xylem-directed independent verification of suppliers' product at the suppliers' premises and with suppliers' inspection equipment.

When an on-site quality audit is required, Suppliers must provide: full access to the equipment and facilities, complete and accurate paperwork, and the personnel necessary for Xylem representatives to verify compliance. Any audit activity as described above will be conducted during normal business hours and with advance written notice to Suppliers. Any findings as a result of the above audit activity shall be acted on promptly by the Supplier.

3.4 Certifications and Supporting Documentation

Xylem may request copies of certificates and supporting documentation, including but not limited to:

- Cleanliness certifications (clean room, IPC, etc.)
- Regulatory listings (UL, CSA, etc.)
- Material composition, declaration or certificate
- ISO certifications
- Quality Management System (QMS) related documentation

3.5 Maintaining Approved Supplier Status

At any time Xylem may, at its sole discretion, remove the Supplier from the Approved Supplier List. In making such a decision, Xylem may consider any criteria deemed relevant, including but not limited to:

- Quality and delivery non-performance of supplier: Non-Conformance Report (NCR) and On Time Delivery (OTD).
- Unsatisfactory response, late response, or failure to respond to Corrective Action Requests or other legitimate Xylem requests.
- No business activity for 24 months.
- Change in supplier's manufacturing or processing capability.
- Unsatisfactory or insufficient results following an audit.

Xylem reserves the right to re-qualify or disqualify Suppliers. Reasons for Re-qualification/disqualification include, but are not limited to:

- Major changes to ownership
- Changes to facility
- Major or continual quality/delivery issues
- Expanded business opportunities

4. Product Part Qualification

The Supplier must immediately notify their responsible buyer at Xylem if they have concerns about the accuracy of, or questions about, any requirements on engineering drawing and/or specifications. Handwritten, lined-out or initialed changes to engineering drawings, specifications or technical data are not allowed.

4.1 Production Part Approval Process (PPAP)

The purpose of performing the PPAP processes is to document objective evidence that the products of Xylem's Suppliers conform to the engineering drawings and meet the design specification requirements. The PPAP procedure is developed to enhance conformity to customer specifications and Critical to Quality (CTQ) characteristics, thereby resulting in customer satisfaction and continuous improvement. Xylem requires different levels of PPAP (Table 1) depending on the particular product characteristics. PPAPs will be unique by drawing revision, supplier, tool and equipment. Suppliers are responsible for ensuring all applicable PPAP requirements have been completed and submitted to Xylem as indicated on the cover page of Part Submission Warrant (PSW) or equivalent document.

Table 1: PPAP Retention/Submission Requirements

Retention/Submission Requirements						
Requirement		Submission Level				
		AIAG Level				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1.	Design Records of Salable Product	R	S	S	*	R
	- for proprietary components/details	R	R	R	*	R
	- for all other components/details	R	S	S	*	R
2.	Engineering Change Documents, if any	R	S	S	*	R
3.	Customer Engineering approval, if required	R	R	S	*	R
4.	Design FMEA	R	R	S	*	R
5.	Process Flow Diagrams	R	R	S	*	R
6.	Process FMEA	R	R	S	*	R
7.	Dimensional Results	R	S	S	*	R
8.	Material, Performance Test Results	R	S	S	*	R
9.	Initial Process Study	R	R	S	*	R
10.	Measurement System Analysis Studies	R	R	S	*	R
11.	Qualified Laboratory Documentation	R	S	S	*	R
12.	Control Plan	R	S	S	*	R
13.	Part Submission Warrant (PSW)	S	S	S	S	R
14.	Appearance Approval Report, (AAR) if applicable	S	S	S	*	R
15.	Bulk Material Requirements Checklist	R	R	R	*	R
16.	Sample Product	R	S	S	*	R
17.	Master Sample	R	R	R	*	R
18.	Checking Aids	R	R	R	*	R
19.	Records of Compliance with Customer-Specific Requirements	R	R	S	*	R

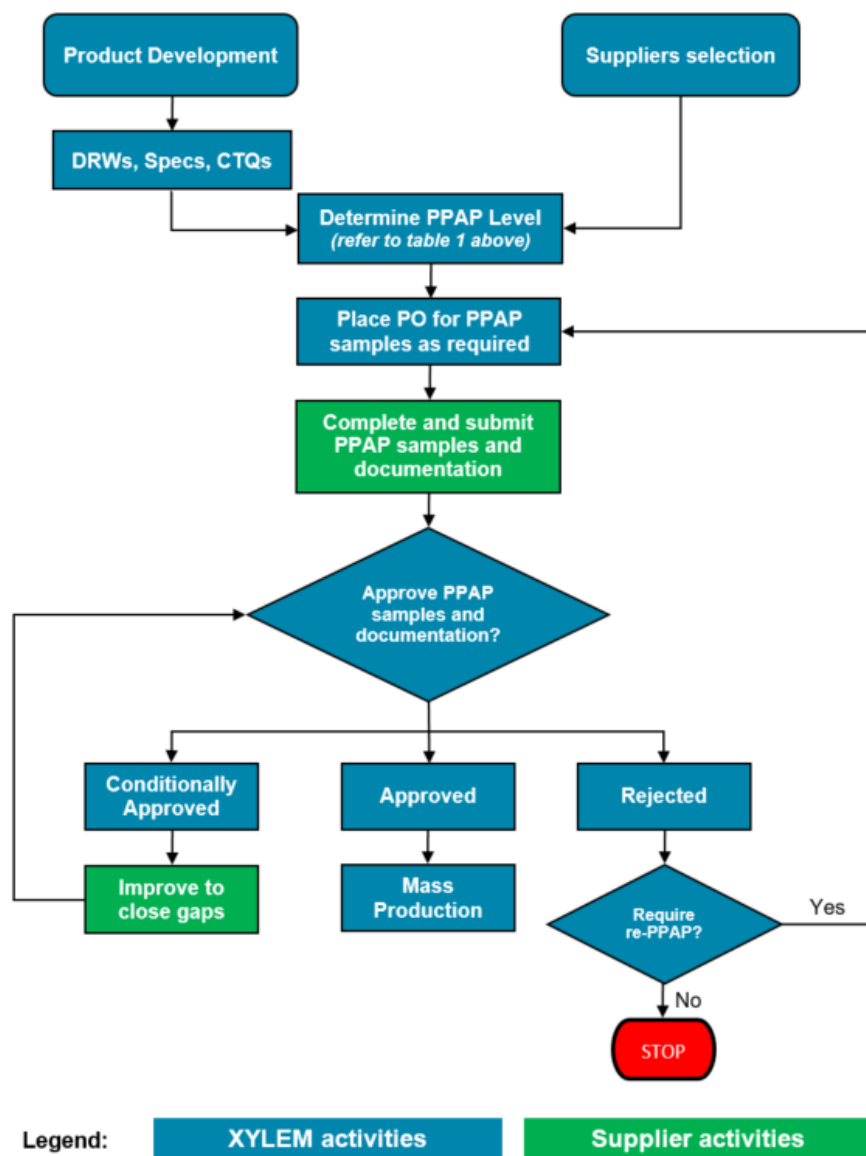
***S** = the Supplier shall submit to designated customer product approval activity and retain a copy of records or documentation items at appropriate locations, including manufacturing.*

***R** = the Supplier shall retain at appropriate locations, including manufacturing and make available to the customer representative upon request*

****** = The Supplier shall retain at appropriate locations and submit to customer upon request.*

The PPAP may be requested at Xylem discretion following the guidelines listed in this section. Parts must be representative of mass production equipment, tooling, fixtures and processes. The PPAP is to be applied both for buy and re-sale finished products. All samples will be requested through a formal Purchase Order.

Figure 1: Supplier Production Part Approval Process Flowchart



4.2 Process Capability for CTQ Characteristics

The Supplier must control and sustain the key parameters of the process affecting CTQs. Process control and capability records related to the product must be retained. The control process must be illustrated by key performance indicators (e.g. Cpk indices). The Cpk must be greater than 1.33 unless specified otherwise by Xylem to be considered an acceptable process capability.

- **Design owned by Xylem:** CTQs defined in Xylem documents (i.e. drawings, specifications) are shared and reviewed with the Supplier.
- **Design owned by the Supplier:** Xylem will work with the Supplier in order to establish proper CTQs to meet Xylem expectations.

4.3 When a PPAP is Required

The Supplier must notify Xylem immediately, in writing, of any changes below and obtain approval prior to manufacturing and delivery. If the Supplier is uncertain if a PPAP is required, the Supplier should contact the associated Quality and Procurement contact within Xylem.

When a PPAP is Required
Initial submission
Engineering change (i.e. material, fit, form, function)
Supplier/sub-supplier tooling transfer, replacement, refurbishment, or repair
Correction to discrepancy (when CTQ)
Change to optional construction or material
Sub-Supplier or material source change
Change in part processing
Parts produced at additional location
Other, if required by Xylem

4.4 Shipment Approval during Mass Production

In special conditions, as required by Xylem, Suppliers shall be asked to provide additional documents (Certificate of Conformance, test data, etc.) before shipping products to Xylem.

5. Non-Conforming Material

5.1 Non-Conformance Management

The Supplier is responsible for the quality of their parts, equipment, products and/or services. When a non-conformance is detected at Xylem sites, Xylem will notify the Supplier of the non-conformance. A non-conformance report (NCR) may be issued based on the severity and urgency of the non-conformance. Suppliers must take immediate action to identify and contain any material suspected of being non-conforming to prevent its use, shipment, and/or mixing with conforming material. Areas of containment include, but are not limited to:

- Finished or incoming warehouses
- Work-in-process
- Transit to Xylem

The Supplier must notify Xylem within 24 hours of suspected non-conforming material that has been shipped. The notification includes part number, lot size, lot number, ship date, and quantity. The Supplier may be asked to support any or all of the following at Xylem's discretion:

- Immediate return of the entire affected delivery to the Supplier, who must then provide a replacement delivery.
- Sorting activity carried out by the Supplier at the Xylem site.
- Sorting activity carried out by Xylem personnel or by a third party company approved by Xylem. After approval of this option by the affected Xylem site(s), the Supplier provides clear inspection instructions and accepts to bear the cost of the operation.
Note: The Supplier must notify Xylem about the disposal of non-conforming products, parts or components: return of such, scrap, repair, rework, etc.
- The Supplier must notify Xylem when the first batch of conforming products will be delivered.

When a non-conforming report is issued to the Supplier, the Supplier must submit a corrective action plan within 10 working days. An extension of time may be granted by Xylem depending on the nature of the non-conformance. The report should follow the principles of 8 Disciplines (8D) method, or an equivalent methodology of the Supplier, and has to conform to Xylem requirements. The Supplier should close corrective actions within 20 working days after notification of non-conformance. The final validation of a corrective action must be confirmed through comprehensive monitoring of the effectiveness of the action plan, which may be verified by Xylem. Once corrective actions have been validated, the Supplier must take appropriate actions to prevent reoccurrence.

5.2 Supplier Deviation Requests

A deviation is considered negligible from a form, fit, function and reliability point of view. A deviation is also considered a temporary solution. The Supplier shall not ship product that deviates from the drawing, specification limits, or design intent without prior consultation with, and written authorization from Xylem. The Supplier shall notify Xylem in the event of potential or actual concern regarding product non-conformance. Xylem may request samples, data or other evidence in order to determine the acceptability of the deviation.

5.3 Recovery

Xylem reserves the right to charge back the Supplier for any costs related to non-conformance.

6. Supplier Performance and Continuous Improvement

6.1 Supplier Performance Monitoring

The performance of the Supplier is monitored by Xylem. This performance is measured via the following two main metrics:

- **Supplier PPM:** This metric calculates the total number of verified defective parts received by Xylem compared to the total number of parts received by Xylem during a specific reporting period.
- **On Time Delivery (OTD):** This metric calculates the percent of product received on time compared to Xylem required date.

Additional performance criteria may be added at Xylem's discretion. Supplier Performance may be communicated through a scorecard or other means. In the event of poor supplier performance, a plan for improvement should be developed and agreed upon between the Supplier and Xylem. Xylem reserves the right to perform periodic on-site audits of the Supplier's facility, quality systems, records, and product ready for shipment.

6.2 Continuous Improvement Program

The Supplier shall have a continuous improvement program aimed at improving their quality, cost and service performance over time. The Supplier's continuous improvement program should be available to Xylem upon request.

For example, the Supplier is expected to:

- Have an adequate employee training plan
- Work on eliminating performance issues
- Work on the early identification and prevention of failure
- Work on increasing the value added of their products/services
- Work on generating Value Analysis Value Engineering ideas
- Improve On Time Delivery performance
- Decrease number of NCR's
- Elimination of scrap and rework
- Minimize process variation
- Improve productivity

Xylem places importance on collaborating with Suppliers with a strong continuous improvement culture and may request joint continuous improvement initiatives such as lead time improvement, increased efficiencies, defect elimination, Lean or Kaizen events etc.

7. Revision History

Revision Number	Revision date	Reason for new revision
01	04/30/2018	Initial Release
02	09/30/2018	Multiple minor revisions
03	2/28/2019	Update Supplier Production Part Approval Process Flowchart