

## QUALITY

# Quality Control in Global Supply Chains

Best practices for maintaining quality across international manufacturing — quality systems, inspection protocols, documentation standards, supplier qualification and traceability.

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## 1. Why quality systems matter more across borders

Sourcing precision parts internationally unlocks cost and capacity, but distance amplifies the cost of a quality escape. A robust, documented quality system — not goodwill — is what keeps parts in spec when the supplier is on another continent. This paper outlines what to expect and what to require.

## 2. Quality management systems

A certified quality management system is the foundation. The relevant standard depends on your industry; a capable manufacturer holds the ones its customers need and runs the same disciplined processes underneath.

| Standard   | Scope                      | When it matters                      |
|------------|----------------------------|--------------------------------------|
| ISO 9001   | General quality management | Baseline for any supplier            |
| IATF 16949 | Automotive QMS             | Automotive & EV programs (PPAP/IMDS) |
| AS9100D    | Aerospace & defence QMS    | Flight-critical, traceable parts     |
| ISO 13485  | Medical device QMS         | Implants, instruments, devices       |

## 3. Inspection through the process

Quality is built in, then verified at every stage rather than only at the end.

- **Incoming.** Material certification and, where required, spectrometer verification of every lot.
- **In-process.** Dimensional checks at each operation with calibrated instruments.
- **First article (FAI).** A full dimensional report (AS9102 in aerospace) proving the process makes the part to drawing.
- **Final.** Visual, dimensional and surface-finish inspection with documentation, often on a CMM.

### FAI vs PPAP

First Article Inspection verifies that a part meets every drawing requirement. PPAP (Production Part Approval Process) goes further, demonstrating the process can make conforming parts repeatably at volume — required in automotive and increasingly requested elsewhere.

## 4. Documentation, traceability and supplier qualification

### Documentation to require

- Material certificates tying parts to raw-stock heat/lot.
- Dimensional/FAIR reports against the drawing.
- Certificates of conformance and, where relevant, NDT and finish records.
- PPAP package for automotive parts.

### Traceability

Heat-lot and serial traceability lets a non-conformance be contained to a known batch rather than a whole shipment — essential in regulated industries and valuable everywhere.

### Qualifying a supplier

- Confirm certifications are current and cover the relevant scope.
- Review a sample FAIR/PPAP and material cert for clarity and completeness.
- Run a paid first article before committing a program.
- Agree inspection level, documentation and communication cadence up front.

## 5. How MechPart Pro delivers audit-ready quality

MechPart Pro runs ISO 9001, IATF 16949, AS9100D and ISO 13485 processes with incoming-to-final inspection, CMM verification, and FAIR/PPAP documentation on request — with full material and heat-lot traceability on every order. Request a sample inspection report or start a first article at [mechpart.io/?page=contact](https://mechpart.io/?page=contact).