

API Standards – 20M

Qualification of Suppliers of Machining Services for Use in the Petroleum and Natural Gas Industries

First Edition, October 2017

Bud Weightman, TG Chairman
QSI, Houston

Flexibility of Standard 20M

From this...



Source: <http://collections.artsmia.org/art/29021/old-time-machinist-at-lathe-lewis-w-hine>

... to this



Source: AGM Automation Systems, Inc.

20M Abstract

Standard 20M is a service standard that addresses the qualification of suppliers of machining services. The goal of the standard is to:

- Support API product specifications / standards where 20M is specified.
- Be utilized when contractually specified as a requirement for compliance.
- Provide machining service providers with a voluntary method to demonstrate their compliance to specified requirements.

Machining Qualification Levels

API Standard 20M has three machining qualification levels: MQL 1, MQL 2 and MQL 3. These three levels define different levels of quality and qualification requirements. These MQLs are numbered in increasing levels of requirements in order to reflect accumulative quality and qualification criteria.

The MQL's are defined as follows . . .

Defining MQL 1

MQL 1

- A MQL 1 machining services supplier, at a minimum, shall have a self-certified quality management system.
- The MQL 1 machining services supplier shall determine the processes needed for the management of machining services.
- The MQL 1 machining services supplier is prohibited from purchasing material or outsourcing services.
- The MQL 1 machining services supplier shall conform to the quality management system (QMS) elements identified in Section 5.

Defining MQL 2

MQL 2

- The MQL 2 machining services supplier shall establish, document, implement and maintain a QMS in conformity with ISO 9001 with the addition of the QMS requirements defined in Section 5 as listed in Table 1.
- The MQL 2 machining services supplier is permitted to purchase material or to outsource services provided that customer specified suppliers are used.
- Qualification to MQL 2 also qualifies a machining services supplier to MQL 1.

Defining MQL 3

MQL 3

- The MQL 3 machining services supplier shall establish, document, implement and maintain a quality management system in conformity with API Spec Q1 with the addition of the QMS requirements defined in Section 5 as listed in Table 1.
- The MQL 3 machining services supplier is permitted to purchase material and outsource services from suppliers they approve.
- An exclusion to API Spec Q1, Section 5.8 is not permitted.

Table 1 – QMS Requirements

QMS Requirements	MQL 1 (see 4.2.2)	MQL 2 (see 4.2.3)	MQL3 (see 4.2.4)
Base Requirements	Section 5 of this Standard	ISO 9001	API Spec. Q1
Competency	5.2	--	--
Equipment Maintenance	5.3	--	--
Test, Measuring and Monitoring Equipment	5.4	5.4.3 5.4.5 5.4.8.2	5.4.8.2
Document Control	5.5	--	--
Customer Property	5.6	--	--
Order Review	5.7	--	--
Identification & Traceability	5.8	5.8 b), c), d)	5.8 b)
Inspection	5.9	5.9.1.2 5.9.1.3	5.9.1.2 5.9.1.3
Nonconforming Product	5.10	--	--
Preservation of Product	5.11	--	--
Records	5.12	5.12.2	--
Continued Conformity of the QMS	5.13	Not Applicable	Not Applicable
Supplier Control	Prohibited from Purchasing Material or Outsourcing Services; See 6.1	Purchasing Material or Outsourcing Services from Customer-Specified Suppliers Per ISO 9001 + 6.2	Purchasing of Material and Outsourcing Services from Approved Suppliers per API Q1 + 6.3

Table 2 – Service Supplier Qualification Requirements

Service	Qualification Requirements
Machining	<p>Verification of capabilities and controls through an on-site audit or a remote technical assessment that addresses the following elements of Section 5, at a minimum:</p> <ul style="list-style-type: none"> — Test, Measuring, and Monitoring Equipment (5.4) — Customer Property (5.6) — Identification and Traceability (5.8) — Inspection (5.9) — Preservation of Product (5.11) — Records (5.12) <p>For suppliers performing machining services, evidence of conformance to API Specification Q1 or Standard 20M, MQL 2, or MQL 3 is acceptable in lieu of an audit or remote technical assessment.</p>
Material testing	<p>Verification of capabilities and controls via an on-site audit or remote technical assessment that addresses the following elements of ISO 17025, at a minimum:</p> <ul style="list-style-type: none"> — Calibration of equipment — Validation of sample preparation and test methods — Conformity with applicable international standards — Identification and traceability — Competency of personnel — Record retention <p>Verification of ISO 17025 accreditation for the required service is acceptable in lieu of an audit or remote technical assessment.</p>

Questions?

Sample Language for API Product Specifications

Provide Awareness

- API Standard 20M contains requirements for qualification of suppliers of machining services.

Sample Language for API Product Specifications

Provide Recommendation

- Manufacturers that subcontract machining services should be aware of API Standard 20M, Qualification of Suppliers of Machining Services for Use in the Petroleum and Natural Gas Industries, including the relevant Machining Quality Level 1, 2 or 3.

Sample Language for API Product Specifications

Provide Requirement

- Manufacturers that subcontract machining services for critical components or products shall utilize organizations capable of meeting MQL 3 machining services as identified in API Standard 20M, Qualification of Suppliers of Machining Services for Use in the Petroleum and Natural Gas Industries.