

Quality assurance and control testing basics



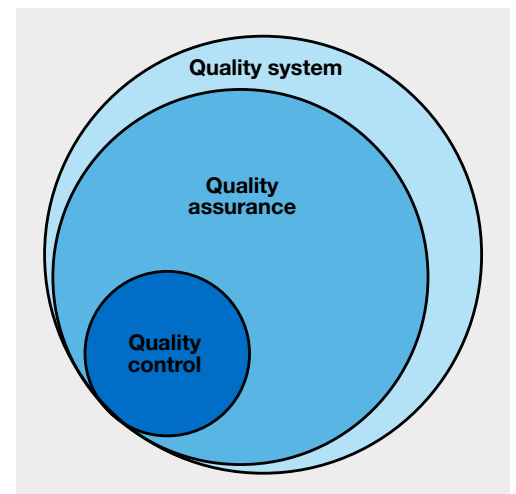
Defining quality assurance/quality control (QA/QC) and testing is important to gain a thorough understanding of a quality management system and the interrelated components. According to the *American Society for Quality (ASQ) Certified Quality Auditor Handbook*, the following are definitions of QA, QC and quality inspection:

Quality assurance can be defined as “part of quality management focused on providing confidence that quality requirements will be fulfilled.” The confidence provided by quality assurance is twofold — internally for management, and externally for customers, government agencies, regulators, certifiers and third parties. An alternate definition is “all the planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that a product or service will fulfill requirements for quality.”

Quality control can be defined as “part of quality management focused on fulfilling quality requirements.” While quality assurance relates to how a process is performed or how a product is made, quality control is the inspection aspect of quality management. An alternate definition is “the operational techniques and activities used to fulfill requirements for quality.”

Quality inspection is “the process of measuring, examining, and testing to gauge one or more characteristics of a product or service and the comparison of these with specified requirements to determine conformity. Products, processes, and various other results can be inspected to make sure that the object coming off a production line, or the service being provided, is correct and meets specifications.”

The figure above illustrates the interrelated terms.



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Quality testing is performed to ensure that products meet applicable regulations or standards, customer standards, or provided parameters or specifications.

METALWORKING QA/QC INSPECTION AND TESTING EQUIPMENT EXAMPLES

- **Coordinate measuring machine (CMM):** performs 2D or 3D measurements with a probe to ensure products adhere to specifications.
- **Dial caliper:** used to measure linear dimensions, thickness or diameter.
- **Digital height gauge:** used to measure height.
- **Surface plate:** used as a base for where measurements are performed.
- **Hardness tester:** used to measure a material's resistance to deformation.
- **Roughness tester:** used to measure surface texture.
- **Thickness gauge:** used to measure thickness or gauge of a material.

EQUIPMENT CALIBRATION

It is important to ensure all QA/QC equipment is calibrated per the manufacturer's instructions. The calibration may be performed in-house or by a qualified third party, depending on the specific piece of equipment. The frequency of calibration is determined by the manufacturer. All calibration documentation should be maintained on file indefinitely.

RECORD RETENTION

All quality testing documentation is recommended to be maintained on a cloud system indefinitely. In the event there is a product recall, documentation will be crucial evidence to help defend your company.

Works cited

Pries, Kim; Ramu, Govind, & Coleman, Lance. "[Quality Assurance vs Quality Control: Definitions & Differences | ASQ.](#)" American Society for Quality. August 31, 2023.

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