



QUALITY - NO IFs, NO BUTs

Process-Consistent Quality Saves Time and Money



Processes



Methods



Tools



1. Challenges of Quality

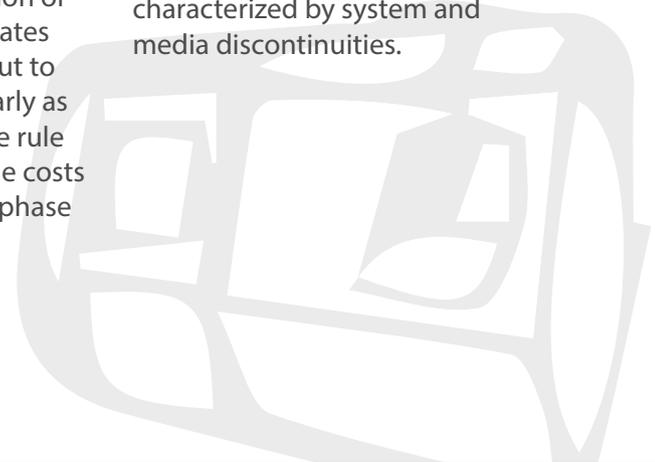
For companies in high-wage countries quality is an important competitive factor. They can't afford to bring to market products of poor quality. That's why ensuring product quality is a concern of all employees of the organization.

Quality requirements increase consistently. Customers are becoming more and more demanding and legal standards for environmental or consumer protection are getting stricter.

Additionally, compliance has to be exactly documented in many industries.

The increase of quality leads to higher risks of error and consequently rising quality costs. It's not just a question of finding the part that deviates from quality standards, but to rectify the deviation as early as possible. According to the rule of ten for quality costs, the costs increase tenfold in every phase of the product lifecycle.

The reduction of quality costs and the prevention of quality deviations in manufacturing is a top priority in all industries. Prerequisite is a better integration of the quality process, which is usually characterized by system and media discontinuities.



2. Quality Assurance is a Management Task

Ensuring the quality is a task of the organization management, a task which within the meaning of Total Quality Management, includes both products and the related processes. Standards such as AS902 define uniform international requirements for setting up these processes.

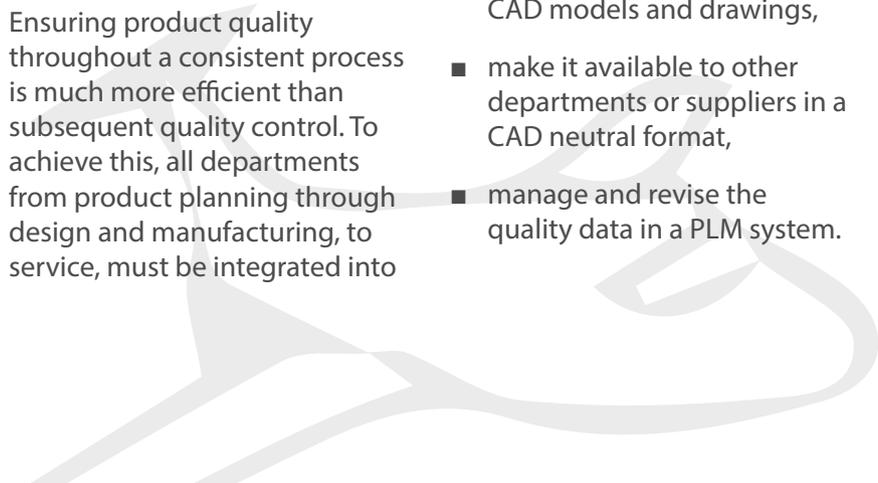
Ensuring product quality throughout a consistent process is much more efficient than subsequent quality control. To achieve this, all departments from product planning through design and manufacturing, to service, must be integrated into

the quality process.

Many quality specifications for manufacturing are determined in product design. In order to be able to use this quality data consistently throughout the process, it must be possible to:

- automatically extract it from CAD models and drawings,
- make it available to other departments or suppliers in a CAD neutral format,
- manage and revise the quality data in a PLM system.

In keeping with a consistent quality process it can be advisable to relocate specific task to departments outside of quality management. This change of mind must be wanted and actively supported by the company management.



3. Capturing of Quality Data

CAD documents contain dimensions, tolerances, and other quality relevant data, that is usually not evaluated by PLM interfaces. Hence the data is not available for other applications and business processes.

A manual evaluation and capturing of this quality data into Excel spreadsheets is time-consuming and error-prone. Additionally, it supports neither revisioning nor reuse of data e.g. for the generation of inspection reports.

The automated stamping of CAD models and drawings allows a clear identification of the quality data and its integration into a PLM system. As a result it can be revised and made available to other applications.

An automated capturing also ensures the evaluation of both the quality data in 2D drawings and the product manufacturing information (PMI) of 3D models. This enables a soft transition to drawing-less manufacturing within a uniform quality process.



4. Data Usage in the Quality Process

The automated capturing of quality relevant data avoids errors and increases process reliability. No false or out-of-date information is passed on. In addition, the data is available for following tasks and applications in the quality process. Examples are:

- automated generation of first article and serial test reports;

- provision of nominal values for series tests with QM systems;
- off-line programming of measuring machines, replacing time-consuming teach-ins;
- support of CAM programming and generation of working plans;

- Quality data exchange with departments and suppliers.

The goal is process-consistent usage of quality data in all departments from product design to quality and to achieve bi-directional communication working in a closed loop quality process.



5. Rule-Consistent Change Documentation

Quality data is clearly labeled when it is first captured and keeps its unique labeling throughout the entire product lifecycle. This labeling links the quality specification with the actual CAD geometry, which is usually designed with nominal dimensions.

All designers, production planning, and quality staff specify the critical dimensions and

tolerances to be tested in series production. The capturing of this data in a shared characteristics list facilitates the linking of the data, e.g. for tolerance analysis.

The linking of quality specifications and CAD geometry speeds up changes, as quality data does not need to be re-captured for every new revision. The automated revision comparison prevents

the repetition of errors or the occurrence of new ones.

Which quality data was modified in which revision is made transparent for all parties involved and can be proved beyond doubt. This leverages change documentation in industries with stringent compliance specifications.

6. Increase Security in the Quality Process

The implementation of a consistent quality process reduces the risk of errors, which need to be fixed in a later stage of the product development process, causing high costs. It also avoids unnecessary costs through exaggerated quality requirements/specification (angst tolerance).

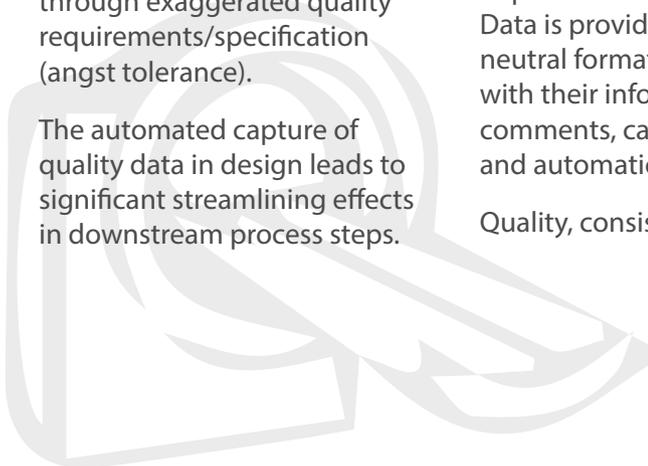
The automated capture of quality data in design leads to significant streamlining effects in downstream process steps.

The time effort for the manual stamping of the drawings alone is reduced from hours to minutes.

The clear identification of quality data also improves the cross-department communication. Data is provided to suppliers in neutral formats and, enriched with their information and comments, can be played back and automatically analyzed.

Quality, consistency, and

comprehensiveness of quality data is checked prior to data release or transfer. The process requirements of different user groups can be configured in rules and integrated in specific workflows.



7. Solution Portfolio BCT

BCT Technology AG is one of the recognized experts in the field of quality management. As a Siemens PLM Software partner we help our customers to shape their processes in the most efficient, and cost conscious way. Our fully integrated solution modules enable companies

- to capture quality relevant data,
- to make the data available in the quality process,
- to better integrate suppliers into the quality process,
- to document the compliance with quality specifications.



As a solution provider with exact knowledge of engineering processes, BCT takes responsibility for the selection, implementation, and customizing of PLM solutions and additional tools for quality assurance as well as user support. We take on board the various departments and support them in setting up a quality process without system or media disruptions.

Due to the close collaboration with Siemens PLM Software, the solutions from BCT are used worldwide in all industries that produce long-living quality products. This includes especially the aerospace and healthcare industries with their strict obligations to provide proof, but also the automotive, hightech & electronics, and industrial machinery industries.

All worldwide leading manufacturers of aircraft engines as well as renowned international healthcare manufacturers use the BCT tools for quality management.



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