



# Teamcenter Quality - Control and Inspection Planning

## Optimize planning and management of quality inspections throughout your product lifecycle

**Benefits**

- Reduce development cycle times and associated costs
- Create quick and efficient planning processes
- Provide complete documentation of plans and modifications
- Significantly optimize inspection planning
- Simplify downstream data acquisition
- Eliminate need for manual identification/ballooning
- Globally collaborate within one product lifecycle management system

**Features**

- Combination of inspection and control planning
- Supports PMI ballooning of CAD drawings
- Rule engine to link PMI and quality characteristics

**Summary**

By using Teamcenter® Quality - Control and Inspection Planning software, you can increase product quality and improve customer relations and satisfaction while decreasing product development time. The integrated solution offers process- and design-oriented inspection planning combined with control plan management to prevent rework and reduce costs.

With the included BCT Inspector functionality, Teamcenter Quality - Control and Inspection Planning supports the automatic ballooning of characteristic-relevant information, such as target values, tolerances, items and numbering from computer-aided design (CAD) models that include product and manufacturing information (PMI). You can allocate drawings to the control plan, to the inspection plan and to individual characteristics, enabling you to automate the time-consuming manual creation of an inspection plan and significantly reduce or eliminate transfer errors such as measurements and sequences.

Complex process, product and supplier structures require effective control and inspection planning from the early stages until the end of your project lifecycle. To support this in the best possible way, the Control and Inspection Planning software integrates directly with:

- Opcenter™ Quality, to execute defined inspections seamlessly on the shop floor
- Teamcenter Manufacturing Process Planner, to promote the planned inspections to your bill of process
- Closed-loop manufacturing, to integrate quality natively into your manufacturing execution process
- Teamcenter Quality - FMEA, to derive information for the control and inspection plan

**Control planning**

The creation of a control plan is a vital component of an effective advanced quality planning process. By using Teamcenter Quality - Control and Inspection Planning, you can complete the inspection cycle (including all parts and processes) and determine essential actions for each phase of the production process. The solution contains all critical and significant quality inspection characteristics (process- and product-related) that are required in the production process. It provides functionality for your department's independent coordination and control of all quality assurance actions. By sharing the same business objects as the Teamcenter Quality - FMEA software you can easily use critical pre-defined characteristics within the

# Teamcenter Quality - Control and Inspection Planning

## Features *continued*

- Support of combined quality failure catalog
- Traceability with integrated history function
- Support for multiple control charts
- Variable, attributive and visual characteristic support
- Control plan norm document creation
- Combination of process- and model-driven quality definitions
- Global quality master data support for characteristics and failures

Teamcenter Quality control plan. The outcome is a standards-driven control plan that can be easily shared with development partners and original equipment manufacturers (OEMs).

## Process-driven inspection planning

Companies can use Teamcenter Quality - Failure Models and Effects Analysis (FMEA) software to identify and create critical process characteristics. With the shared platform and data model these characteristics can be used directly in the control and inspection planning process, eliminating duplicated data and effort. When no FMEA is in place, you can create the process characteristics directly inside Teamcenter Quality - Control and Inspection Planning.

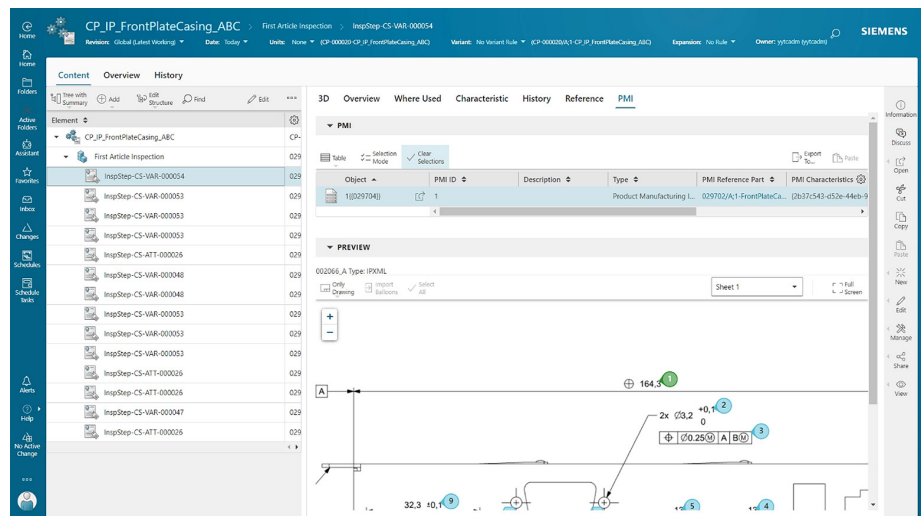
## Model-based inspection planning

Model-based inspection plans leverage CAD models to balloon PMI and data points linked to specific quality characteristics of the Control and Inspection Planning application. The linking of the PMI to characteristics can be customized

by a rule engine based upon the target value, tolerances, numbering or criticality. This linkage provides structured master data for the characteristic library and easy re-usability of the single characteristics between different control and inspection plans with a combined traceability. The linked PMI provides a direct connection of the inspection definition and its characteristic to a specific point on a product and acts as a first electronic work instruction to indicate where the measurement needs to be performed.

## Definition of statistical process control

If needed, the single inspection plan with its inspection definitions and characteristics can be further detailed with statistical process control (SPC) checks. These SPC checks define which real-time statistics and control charts should be applied to any incoming measurements in the quality execution system, enabling you to proactively adapt the production process before a single bad part is produced when a negative trend is detected.



2D ballooning from a CAD drawing over PMI

## Variant and effectivity configuration

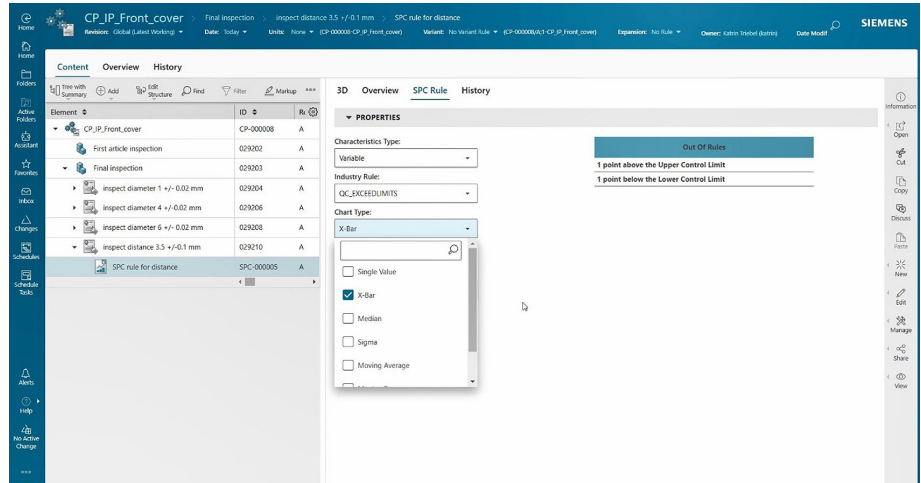
Teamcenter Quality - Control and Inspection Planning supports the configuration of the entire structure (control plan, inspection operations, inspection definitions, SPC checks and rules, etc.) with multiple variants and effectivities. This allows the creation of a single control and inspection plan for multiple product variants and the ability to configure which inspection is relevant for which variant. The effectivity provides the ability to define additional time- or unit-based configuration of the structure, to perform certain checks only from a specific time in the future.

## Execution integration

Planned inspections are most beneficial if they are automatically transferred to the shop floor for direct execution of the quality in the production line. Teamcenter Quality - Control and Inspection Planning supports this use case with an out-of-the-box integration to Opcenter Quality Control software or via Siemens manufacturing execution system (MES) offerings. Both integrations support the execution of inspections and can push detected issues back to Teamcenter for deeper root cause analysis with Teamcenter Quality Problem Solving software.

## Master data

All characteristics are defined in a global characteristic library as master data. The library enables the re-use of characteristics for multiple inspection definitions, which helps identify problems between multiple inspection points and structures.



SPC check definition for an inspection definition

Every characteristic can be enhanced with potential failures, which are also defined in the global master data and re-used by Teamcenter Quality - Problem Solving and the FMEA. You can connect potential failures with actual occurred defects from the shop floor and the risk evaluation of the FMEA.

## Advantages

With a modern architecture and HTML5-based user interface it is now easier than ever to create inspection plans for quality execution. Integrations with multiple other solutions allow re-use of data and provide a full digital twin of quality. Teamcenter Quality - Control and Inspection Planning is the Siemens solution for combining process- and product-driven quality inspection from different sources into a combined dataset.