

# Guidelines for Quality Assuring Process Management in Parts Cleaning

These guidelines, which have been compiled by the FiT expert committee for cleaning, are intended to provide orientation for an exchange of experience and the development of new solutions. They provide a basis for the cooperation in this respect between suppliers and plant operators.

## Fundamentals for Quality Assuring Process Management in Parts Cleaning

1. Producing quality instead of testing it requires quality control by means of:
  - Continuous monitoring of part cleanliness and process parameters which influence quality
  - Detecting changes
  - Immediate intervention into the cleaning process
2. Quality control is based on the cause-effect relation between required part cleanliness and process parameters.
3. Process management includes control of the cleaning process by means of targeted action implemented by the plant operator as well as targeted measures from the fields of process engineering and from measuring/testing and control technology.
4. The objective of process management in industrial parts cleaning is to assure sufficient part cleanliness as required for the respective follow-up process with minimal consumption of resources.
5. Knowledge-based process management for a concrete cleaning task is based on fundamental task-independent knowledge ("how does it work in general") and yet to be developed, task-specific knowledge ("the detailed solution for the specific case").

## **Guidelines for Quality Assuring Process Management in Parts Cleaning from a Chemistry/Process Viewpoint**

1. Stable part cleanliness requires specification of the chemicals to match the process.
2. Quality assuring process management demands an understanding of the cleaning chemicals and their action within the process.
3. Selecting chemicals and defining the process are based on knowledge of the requirements for part cleanliness as well as the kind of contamination and the type of raw parts to be cleaned.
4. The effectiveness of the selected chemicals can only be optimised when monitored on a regular basis, dosed in a targeted way and kept stable.
5. Qualified plant management is precondition for economic and effective use of chemicals.

## **Guidelines for Quality Assuring Process Management in Parts Cleaning from a Systems Engineering Viewpoint**

1. Stable part cleanliness is achieved by means of suitable systems engineering. In this respect, the spectrum of parts as well as the type and amount of contamination must lie within defined limits.
2. The system is laid out based on the determination of the required cleaning process and the selection of a suitable cleaning agent.
3. In order to achieve stable part cleanliness, quality influencing process parameters within the system must be monitored at regular intervals.
4. Stable part cleanliness requires monitoring and purification of the cleaning agent at regular intervals.

## **Guidelines for Quality Assuring Process Management in Parts Cleaning from a Measuring/Testing and Control Viewpoint**

1. In addition to parts and material flow within the cleaning system, an information flow must also be set up and integrated into the controls. This includes all parameters which influence quality and their necessary coordination within the process chain for stable part cleanliness.
2. Process control is based on knowledge of the cleaning mechanisms and their control for stable part cleanliness.
3. Experience has shown that regular monitoring of the process media and cleanliness control of parts lead to process reliability. Measuring the parameters makes it possible to control actual values and compare them to reference and limit values.
4. The detection of process-related changes allows for immediate intervention by means of suitable process management measures. This leads to increased process reliability and stable part cleanliness.
5. Process management requires process measuring technology for monitoring as well as laboratory measuring technology for defect analysis.

## **Guidelines for Knowledge Transfer and Qualification for Quality Assuring Process Management in Parts Cleaning**

1. Basic knowledge and experience for controlling cleaning processes must be combined.
2. Company-internal knowledge and experience must be prepared and made accessible by means of cross-competitor cooperation amongst suppliers and users.
3. Any knowledge gaps in the area of quality assuring process management must be eliminated by means of goal-oriented research.
4. It must be the goal of knowledge transfer and qualification to strengthen the expertise of those responsible for making decisions in order to achieve a practical, efficient and high-quality solution, even in the case of special requirements.

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