

Process responsibilities



Basic responsibilities of supplier and operator / 1

Responsibilities for the operation of cleaning systems

In the case of PCBA cleaning processes in particular, the overall process consists of six key sub-areas that are interdependent:

1. **Machine:** Cleaning system, i.e. hardware incl. software / automation
2. **Chemistry:** Detergent, additive(s) if applicable = OTC (according to declaration) or determined by test
3. **Temperature** Process parameter - process temperature dependent on task and/or chemical requirements
4. **Time:** Process parameter - process duration due to target achievement specification
5. **Software:** Process design - control of all process elements and stages
6. **Cleaning goods of the operator/user:** Printed circuit board design/PCBAs/components - Clarify/ensure/test and approve material/process compatibility of the components/assemblies to be cleaned.

Definition and delimitation of responsibilities:

Cleaning system supplier (kolb/kolb sales partner)

1. **Machine:** Cleaning system - Cleaning system, i.e. hardware incl. automation / software
 - kolb cleaning system
 - kolb Wastewater treatment e.g. WPSD-IU module and its process function according to kolb patent and process sequence steps
 - Recommendations/specifications regarding process-relevant operating substances and materials e.g. approved detergent types for the cleaning/waste water processes

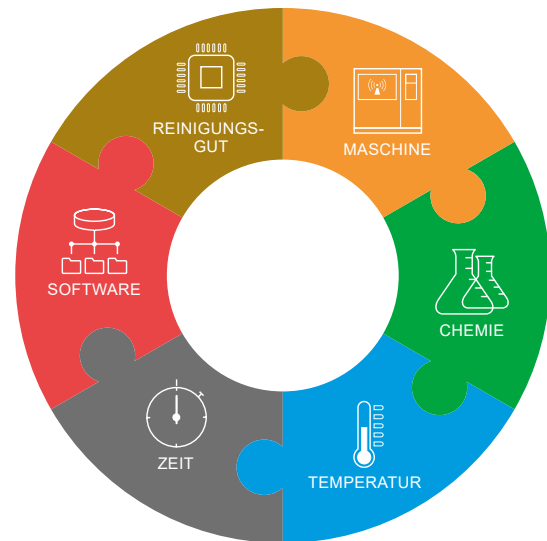
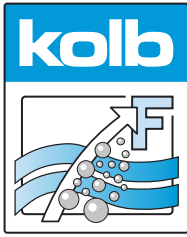


Fig. 1: The kolb cleaning circuit shows the subsections of the electronics cleaning process

Chemistry supplier (kolb/kolb distri. partners, third parties)

2. **Chemistry:** Cleaning chemistry - incl. specifications and process recommendations
 - Cleaning medium, its analysis, information on service life, disposal, etc
 - Specifications regarding temperatures, filters, rinsing water qualities, as well as process-relevant recommendations, etc.
 - Coordination with the cleaning system supplier regarding the process requirements, including usability in a wastewater treatment unit, e.g. kolb WPSD-IU



Process responsibilities



Basic responsibilities of supplier and operator / 2

Operator / customer (or service provided by qualified external process engineers)

3. **Temperature:** Process parameters - process temperature dependent on task and/or chemical requirements
4. **Time:** Process parameter - process duration due to target achievement specification
5. **Software: Process design** - control of all process elements/stages,
 - Process sovereignty and merging of sub-areas 1 - 5
 - Run in process
 - Process adaptation/optimization and process engineering
 - Assessment of the cleanability/specifications of the cleaning goods listed under 6.

TASKS:

- Temperature and cycle time are stored as process parameters in the software (sub-area 5) with the other parameters required to achieve the target.
 - Target achievement specifications are primarily the desired quality, as well as e.g. cycle times, operating costs, etc. The test methods for checking the quality specifications must be clearly defined and demonstrated.
 - In the software (sub-area 5), the operating conditions must also be taken into account in the process parameters, e.g: energy supply, exhaust air, water/ DI-RO water supply, waste water indirect discharge permit, maintenance.
 - For reproducible, smooth and successful operation careful process and personnel training is required in this context.
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6. **Cleaning goods of the operator/customer:** Printed circuit board design/PCBAs/components - Clarify/ensure/test and approve material/process compatibility of the components/assemblies to be cleaned.

The operator is additionally responsible for

- the proper operation and maintenance of the cleaning unit / overall process.
- compliance with occupational health and safety and environmental regulations.
- compliance with public regulations, any approvals by the local and national authorities.