



Chamber Cleaning Systems ZK

The ZK-Series Chamber Washer provides a cost-effective solution for low-volume cleaning. This single chamber system has an integrated spray cleaning system and offers a wide range of cleaning processes. A multi-chamber system can be utilized instead of a single chamber to increase throughput.



Online inquiry
for your cleaning system

www.zippe!.com/inquiry

Technical Process

- Different cleaning and drying processes possible in a single chamber
- Integrated spray cleaning system
- Manual or Automatic loading
- Separate cleaning agent container
- Programmable cycle timing
- Throughput system is possible

Optional Processes

- Air circulation drying
- Infrared drying
- Water treatment system
- Multi-chamber design possible to increase throughput
- Loading equipment / travelling carriage
- Automation process possible



FUNCTION

This system is comprised of cleaning chamber(s) and media tanks installed underneath. The parts to be cleaned are placed in baskets or on fixtures and pushed into the chambers by a loading unit (e.g. loading table) for easy handling. Loading can be done manually or by an automated system. After loading, the door is closed for cleaning.

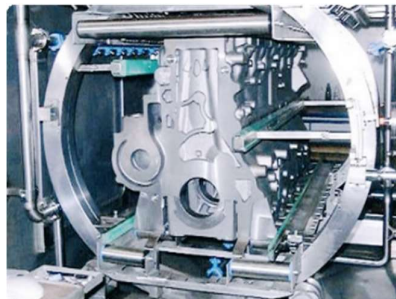
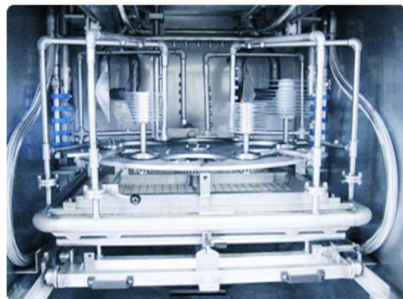
Available treatment steps

Cleaning
Rinsing
Drying

The parts to be cleaned are sprayed with the required spraying pressure either by rotating crosses installed in the chamber (i.e. force-actuated, rotating spraying crosses equipped with nozzles), probes, or movable registers.

It is also possible to integrate water-bearing fixtures which are automatically coupled to a plug-in type main extension inside the cleaning chamber. This way, even hard to reach areas of the parts can be reached by the washing media. To keep carry-over of the media to a minimum, the lines are blasted with air after each process. The cleaning medium is heated to the required cleaning temperature, which is kept constant throughout the entire duration of the process, either by electrical heat (immersion heater) or technical heat using heat exchangers (hot water, thermal oil, gas heater, etc.).

Selection of the most suitable drying method depends on the part and the desired final condition thereof. Loading and unloading can be done manually or by an automated system. All process media present in the machine are filtered for recycling and remain within the circuit.



Tanks

The water necessary for machine operation is normally supplied directly from the customer's water supply mains and is controlled via filling level sensors. Replenishment of the water and cleaning media is automatic. If multiple tanks are used simultaneously, water supply is available via cascade pumps at customer request. The media are returned from the process zones via a return line with an integrated screen. During this process, our specially developed sliding unit ensures that the various media will be returned to the correct tank if multiple cleaning and/or rinsing processes are used. All tanks are made of stainless steel and heat-insulated.

Closed circuits

All media present in the machine are filtered and reintroduced into the circuit for an effluent-free machine operation.

Enclosure

The entire machine can be enclosed to reduce noise emissions. Large-surface doors will be integrated to ensure adequate accessibility for maintenance and inspection works.

Nozzle system

A variety of different nozzle systems are used for application of the cleaning media. A variety of rotating spraying registers, water-bearing carrying systems, or movable spraying registers are used. It is also possible to use differing pressure levels for cleaning. The nozzle type and volume flow rates are configured and calculated during the design phase.

Bath care

To achieve maximum service life for cleaning fluids, the washing media can be filtered in many different ways. Coarse dirt is separated during a first phase while the medium is returned to the tank. Further residue is separated during full flow by a fine-mesh filter. This process can use a duplexed, double filter systems that can be switched over manually to allow filter changes during ongoing operation. This equipment is standard in every Zippel cleaning system. For special needs, additional bath care systems are available as full-flow or bypass systems, including screen inserts, band filters, swarf conveyors, solenoid separators, three-phase centrifuges, evaporators, osmosis systems, etc. For oil separation, we recommend our proprietary, highly-effective ECOSEP gravity oil separator which works through coalescing action. It separates the oil, passes it into a separate tank, and returns the cleaned water into the container. Even physical water treatment is possible with this system.

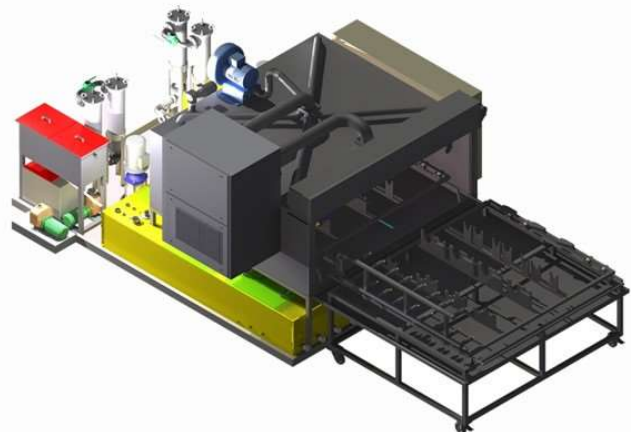
Floor trough

An integrated floor trough is used to ensure collection of the fluids in case of tank leakage. In larger-sized machines, the floor trough is integrated in the machine's supporting frame. The floor trough is made of stainless steel and equipped with a leakage warning probe. The collecting volume is at least identical to the volume of the largest container.

Drying

There are a number of different systems available for part drying. Normally, side channel blowers or high-pressure fans are used for this purpose. These fans are designed specifically for the required volume flow and pressure rates and are adapted to the specified requirements. The air is applied to the workpieces either by a specially developed blasting pipe system (capillary system with electrically heated air) and/or blasting fan. Air heaters may be used to increase the temperature.

A vapor exhaust system ensures the shortest-possible drying times. This unit is used to extract and actively re-condense vapors during the cleaning process while ejecting dried air into the environment. It is also possible to design a virtually exhaust-free system upon request. Another available drying method involves the use of infrared rays to heat the workpieces and evaporate the residual moisture.



The increase in environmental protection requirements for industrial enterprises is the reason behind our search for environmentally-friendly methods of preventing air and water pollution. Over the last 40 years many of Zippel's innovations have been awarded prizes and have redefined standards for water and air treatment. Such inventions combine ecology with economy in an exemplary way to minimize costs for energy, waste and recycling.

Our systems usually operate within closed loop systems in all medium-conducting sectors. The closed loop does not channel wastewater out of the machine, rather it feeds it back in after it has been filtered. To lower the cost for disposal of solid waste and reduce its quantities, there is an option to filter the discharged waste further and discharge it as a concentrate. Zippel has been developing such optimized systems for filtering, exhaust air treatment and water treatment with its suppliers for many years. Closed, segregated loop systems are the best way to lower operating costs such as chemical consumption, water consumption, energy consumption, and heating. In order to increase the efficiency of our machines, we attach great importance to energy-efficient planning and design of components used.

Environmentally friendly Processes

- BioJet: Hydro-physical water and fluid treatment to prevent and reduce the biological contamination of industrial water and process water
- AquaCorrect: Reduces the surface tension of process water and improves oxygen enrichment
- ECOSEP gravity oil separator: Reduces cost and provides longer service life due to permanent oil separation
- Water treatment processes
- ZUT vapor exhaust: Extraction and filtering of steam. Recycled fluids are returned to the plant
- Three-phase centrifuge
- Filtration technology: custom-designed for the plant in compliance with the most stringent environment requirements; for improved production results
- Osmosis systems: Compact systems for the desalination of softened potable water
- Closed fluid and exhaust-air circuits



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Sample Technical Data for the K1-200-3-LB Chamber Washer

The K1-200-3-LB is a chamber cleaning machine designed for the cleaning and drying of parts made of different alloy steels. It is comprised of a cleaning chamber and three tanks installed underneath for cleaning 1, cleaning 2, and rinsing. The parts are loaded into the cleaning chamber by a movable loading table. After closing the door, the cleaning agent is applied to the parts by spraying crosses equipped with nozzles which rotate above the goods to be cleaned. The parts are then dried with hot air and can be unloaded after the door is opened and the all-clear sensor is activated.

Machine specifications (circa values)

Length	Breadth	Height	Weight	Process sections	Gravity oil separator
3,000 mm	3,000 mm	3,000 mm	3.5 t	4	ECOSEP

Temperature of bath	Agent	Sound level
60 – 65° C (140-150 F)	acid/alkaline	< 80 dB(a)

Connections

Water intake	Compressed air	Electrical
60 – 90 PSI; R ½ "	60 - 90 PSI; R ¾ "	480V/3ph/60Hz

Cleaning areas

cleaning 1 | cleaning 2 | rinsing | drying

Cleaning

Tank capacity	Pump	Filter
265 Gallon	70 GPM @ 60 PSI	100 µm

Rinsing

Tank capacity	Pump	Filter
325 Gallon	50 GPM @ 40 PSI	100 µm

Hot air drying

2 blowers		
350 ft³/min	420 lb/ft²	6.5 kW, 13 A