



Immersion Cleaning Systems ZT

The ZT Series Immersion Washer offers an ideal solution for both bulk goods and individual components. The complete wetting of the parts through immersion enables difficult part designs with heavy soil-load to be thoroughly cleaned. The cleaning itself can take place using aqueous-based solutions, with or without ultrasonics. Multiple immersion tanks can be placed one after the other to reduce the throughput time.

Online inquiry
for your cleaning system

www.zippel.com/inquiry

OVERVIEW

Technical Process

- Thorough cleaning as a result of immersion process
- Multiple tanks for different cleaning agents
- Automatic loading possible
- Parts can be rotated and swiveled in all directions
- Programmable cycle timing
- Can use plastic-coated tanks when using aggressive mediums

Optional Components

- Ultrasound cleaning
- Vacuum drying
- Cold or hot air drying
- Integrated conveyor system
- Water treatment system
- Unlimited number of immersion tanks due to grid design

Advantages

- High positioning accuracy
- Low water consumption
- Small space requirement
- Suitable for all component sizes
- Compatible for bulk goods and individual components
- Low servicing costs due to anti-twist snap closure on the nozzle line

FUNCTION

The parts to be cleaned are unloaded from the infeed conveyor by a loading unit either individually or in bulk (in containers or baskets) and placed in the consecutive dip tanks together with the required media.

The following treatment steps are available as part of the immersion method

- Cleaning
- Rinsing
- Treatment with liquids or ultrasound
- Spraying,
- High-pressure deburring
- Passivating
- Drying
- Cooling

The parts or workpiece carriers are placed on an unloading station either manually or by an automated system (e.g. within an interlinked system). From here, a loading unit takes over the loading of the individual containers/zones and the further handling between the zones. In smaller machines, manual handling can be used between the zones to reduce costs.

The number of containers/zones depends on the number of treatments administered. The handling system places the workpieces or workpiece carriers into the respective basins. Here, the goods to be washed can be optionally placed into a rotatory device to create rotary and/or swiveling movements during the process. Inside the basin, the medium is set into motion by pressure flooding and special nozzles under the liquid level to optimize the cleaning effect. After completion of the treatment, the loading system picks up the goods to be washed, forwards them to the next station, and sets them down. For goods requiring scooping, the grippers of the loading system are available in a motorized design to allow bucketing of the washing medium above the appropriate zone and minimizing media carry-over. To prevent re-soiling of the workpieces during unloading by floating impurities, the cleaning baths are equipped with a surface flooding mechanism.

In a dipping system, the zones can also be designed as spraying or high-pressure stations like chamber systems. It is also possible to integrate an ultrasound in the various dip tanks. It is possible to precede the unloading process, which like the loading process can be done manually or by an automated system, with an upstream drying and/or cooling phase. Selection of the most suitable drying method depends on the workpiece and the desired final condition thereof. All process media used in the machine are filtered and reintroduced into the circuit, with filtration fine-tuned to residual-dirt requirements.



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.

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.

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.

Closed circuits

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

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.



ECOLOGICAL COMPONENTS

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 components

- 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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TECHNICAL DATA

Sample Technical Data of the T9 Immersion Cleaning System

The T9 is comprised of several consecutive immersion tanks, a drying chamber, and a separate vacuum chamber for cleaning and drying cylinder heads made of steel. The parts are handed over automatically to the individual chambers via a portal axis system. After placement, the baskets containing the parts are put into rotation. The system is equipped with ultrasound plates for removing clinging dirt. In the drying zone, the cylinder heads are pre-dried by a high-pressure fan and forwarded into the vacuum zone by a chain conveyor.

Machine specifications (circa values)

Length	Breadth	Height	Weight	Zones	Cycle time
14,000 mm	4,600 mm	3,500 mm	45 t	7	24 pcs/h

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

Connections

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

Cleaning areas

spray cleaning | immersion cleaning with ultrasonic | immersion-spraying | blow-off | vacuum drying

Cleaning

Tank capacity	Pump	Filter
530 Gallon	220GPM @ 150 PSI	100 µm

Rinsing

Tank capacity	Pump
530 Gallon	220GPM @ 150 PSI

Vacuum drying

Vacuum Pump	
400 ft³/min	7.5 kW, 15 A