Rotary Transfer Cleaning Systems RT

To satisfy steadily increasing requirements for shorter processing times, Zippel has enhanced the classic multi-chamber system. Machines in the RT Series combine innovative technology with efficient cleaning for parts with the most intricate designs. The RT Series can be integrated with robot systems for loading and unloading as well as a de-burring process to assure the highest levels of productivity with state-of-the-art automation.

Online inquiry

for your cleaning system

www.zippel.com/inquiry

OVERVIEW

Technical Process

- Multi-stage cleaning and rinsing processes
- Optimum quality robot technology
- Flake deburring up to 1000 bar
- Integrated medium maintenance system
- Short cycle times

Optional Components

- Vacuum drying
- Cold or hot air drying
- Water treatment system
- Automation/conveyer technology

Advantages

- High positioning accuracy
- Low water consumption
- Small space requirement
- Fully operational even when individual chambers are deactivated
- Low servicing costs due to anti-twist snap closure on the nozzle line

FUNCTION

The individual treatment chambers are situated atop the rotating turntable. The actual number of chambers depends on the number of treatment steps required for optimum cleaning.

Possible treatment steps

- Low-pressure cleaning
- High-pressure flake deburring
- Rinsing
- Flooding
- Vacuum and/or hot-air drying

Even mechanical treatment processes such as brush cleaning or brush deburring are possible. If necessary, the downstream outfeed area may be equipped with a cooling tunnel for further cooling of the cleaned parts.

Loading & unloading of the parts is generally done in the same zone. To achieve a high level of positioning accuracy, loading & unloading should ideally be done by a robot or another type of automation solution. Manual loading is also possible as an alternative. During loading, the parts to be cleaned are automatically fastened in a fixture inside the chamber and cycled through the individual stations, with the parts remaining in the same chamber always. That way, the cleaning machine can continue its operation with the remaining chambers even in case of a failure or deactivation of an individual chamber. The cleaning process is carried out while the chamber is closed. The high-pressure cleaning is done via high-pressure nozzles mounted either inside the chamber or to a robot arm. These nozzles are supplied by a high-pressure pump with just the right amount of pressure for the various parts.

Through optional moving of the part (e.g. rotating, swiveling, positioning, etc.) and/or the robot arm, both the three-dimensional contours of a workpiece and the boreholes can be targeted in a very precise manner. Hence, complete coverage…

Selection of the most suitable drying method depends on the part design and its desired final dryness. 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 agent 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 integrated screen. All media containers 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. The system supports pressures ranging from low pressure to high pressure (up to 1,000 bar). The nozzle type and volume flow rate are configured and calculated during the design phase. To ensure optimum maintenance and manageable repair, we generally use nozzle clip systems and the nozzle fittings which are equipped with quick-release fasteners. High-pressure nozzles can also be used for flake deburring, if needed.

Bath care

To achieve maximum service life for cleaning fluids, the washing media can be filtered in many 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.

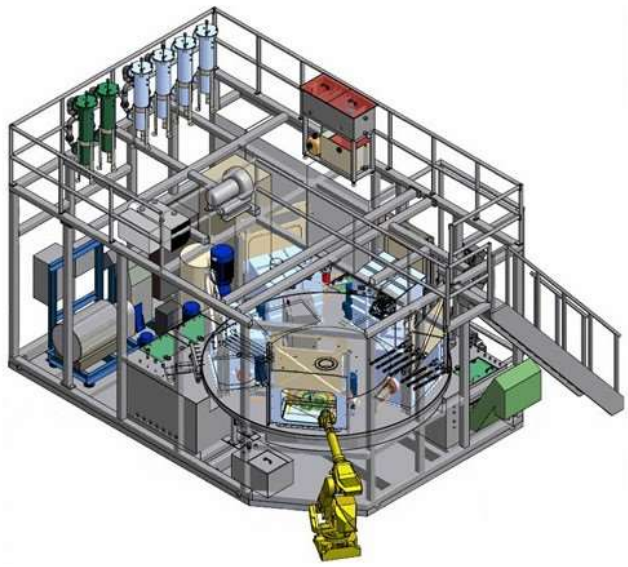
Floor trough

An integrated floor trough is used to ensure collection of the fluids in case of a tank leakage. In larger-sized machines, the floor trough is integrated in the machine's supporting frame. The floor trough is made of rust-free 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 air heating) and/ or blasting fan. Air heaters may be used to increase the temperature.

Another available drying method involves the use of infrared rays to heat the parts and evaporate the residual moisture. The use of a vacuum drying is also possible however, the parts to be cleaned must have a certain weight in order to be able to store the energy during the washing process and to release it during the vacuum drying phase in form of evaporation enthalpy.



ECOLOGICAL COMPONENTS

The increase in environmental protection requirements for industrial enterprises is the reason behind our search for environmentally-friendly methods for 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 com- bine ecology with economy in an exemplary way since they minimize current 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 years. Closed, segregated loop systems are the best way to lower operating costs such as chemicals consumption, water consumption, energy consumption, andheating). 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: Hydrophysical 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: Reduced costs and provides longer service life due to permanent oil separation
- Water treatment plant
- ZUT vapor exhaust: Extraction and filtering of steam. Recycled fluids are returned to the plant
- Three-phase centrifuge
- Filtration and separation technology: A concept 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 of the RT-5000-R(H)STVK

The RT-5000-R(H)STVK is a through-feed cleaning machine with rotary cycle function for cleaning and drying. The chambers are loaded by a robot. After loading, the parts are cleaned, rinsed, dried, and cooled inthe cleaning machine and subsequently unloaded again by a robot.

Machine specification incl. roundtable with cooling tunnel (circa values)

Length	Breadth	Height	Weight	Chambers	Cycle time
8,000 mm	4,000 mm	4,200 mm	15 t	5	54 sec/pcs

Temperature of bath	Agent	Automation	Sound level	Motor engine roundtable
40 – 80° C (104-175 F)	neutral/alkaline	1 Robot	80 dB(a)	3 KW

Connections

Water intake	Compressed air	Electrical
60-90 PSI, R ¾“	60-90 PSI, R ¾“	480V/3ph/60Hz

Cleaning areas

low zone | high pressure zone | rinsing zone | vacuum drying zone | cooling zone

Cleaning

Tank capacity	Pump	Filter
400 Gallon	140 GPM @ 60 PSI	50 - 200 µm

Rinsing

Tank capacity	Pump	Filter
400 Gallon	90 GPM @ 40 PSI	15 - 50 µm

Blowing

Blowers		
300 ft^3/min	420 lb/ft^2	5 kW, 12A