

**Process water recycling systems
Chemical waste water
treatment systems**



Rösler provides total finishing solutions



When it comes to surface finishing, Rösler is known to offer complete, well-engineered process solutions. Based on our comprehensive knowledge of mass finishing and shot blasting technologies, we can provide our customers with practically unlimited finishing solutions. In our state-of-the-art test lab, we conduct meaningful test trials to develop the optimum finishing processes for our customers because only complete solutions yield the best results. We are not simply offering specific surface finishing processes but we also supply perfectly matched auxiliary equipment and consumables. This approach has proven to be highly successful and has established Rösler as the global technological and market leader, with groundbreaking innovations and extremely high quality standards.



In more than 60 countries we support our customers with a comprehensive network of Rösler sales branches and independent distributors.

Rösler is the only supplier in its field maintaining test labs all over the world, where we develop process solutions under actual operating conditions and select the most suitable equipment. This approach saves our customers not only long travel distances and high freight costs, but it also provides them with products and processes that have been extensively tested by our specialists under the most severe operating conditions.



DIN EN ISO 9001 and 50001



Global network of test labs

Test labs for mass finishing and shot blasting at the Rösler headquarters in Untermerzbach:

- ▶ More than 95 mass finishing and shot blast machines.
- ▶ About 2,700 m² (27,000 sqft) workspace

Our teams in USA, Great Britain, France, Netherlands, Belgium, Spain, Turkey, Romania, Italy, Austria, Switzerland, Russia, Brazil, Serbia and India provide similar test lab services.

Complete solutions

Besides demanding high quality, environmentally safe and efficient products, our customers also prefer to purchase all process components from one single source. That is why we offer not merely the processing equipment but the complete package with perfectly matched consumables. This guarantees the best finishing results and absolute process safety. Our global service teams take care of the delivery and the installation for you. Qualified engineers train our customers right at their location. And, of course, our after-sales service members will answer all of your questions. Quick supply of all spare parts and professional consultation by our experienced process specialists ensure that your finishing processes are always running smoothly.

Rösler Academy

Professional knowledge within a highly systematic framework

In hands-on and effective seminars our Rösler professional trainers, certified by TÜV Rheinland, provide you with theoretical and practical knowledge about mass finishing and shot blasting as well as Lean Management.

You will find a complete list of our seminars under www.rosler-academy.com



Applications / Application examples



Flocculation
Buffer
 Treatment
Precipitation
 Recycling
Sludge
Process water
Sludge dewatering
Centrifuge
 Cleanliness
 Effluent
 Solid

Overview



Process water recycling

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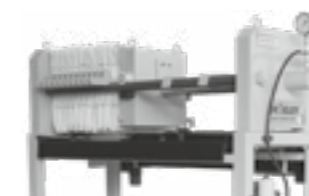
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Process water recycling

For ecological and economic reasons recycling of the process water in connection with industrial manufacturing operations is highly desirable. The principle of the 2-phase separation of solids/liquids with centrifugal force has become the standard for modern process water cleaning systems, which ensures process stability. Powerful systems, combined with sophisticated process technology, allow for a wide range of applications, reaching well beyond just mass finishing processes.

How it works

The dirty water, contaminated with solid particles, is transferred directly from the mass finishing machine to the centrifuge or through a pump station (lifting station). A pre-screen collects larger contaminants at the inlet of the collecting tank. The premature settlement of the solid particles to the bottom of the collecting tank is prevented with a built-in electric stirrer. The dirty water is continuously supplied to the rotating aluminum drum of the centrifuge with a compressed air diaphragm pump. The high centrifugal force created by a rotational drum speed of up to 3,000 RPM ensures that even very small and lightweight solid particles are deposited as solid sludge on the drum wall. The cleaned liquid is picked up by a collecting tube and returned to the mass finishing machine (or other users). After a preset time the sludge can be removed from the drum by simply lifting the specially designed polyurethane sludge basket out of the drum. In automatic centrifuges the sludge is mechanically removed with a peeling knife scraping it from the drum wall. Depending on the required water volume multiple mass finishing machines can be connected to one process water recycling system.



Fully automatic system
Z 1000 ASS II-Turbo

Applications

Mass finishing

Rösler centrifuges are the standard for the successful separation of solids from industrial liquids

Other applications

- ▶ Machining/grinding centers: Maintenance of coolants/lubricants and grinding oil
- ▶ Technical ceramics: Maintenance of the process water for saw cutting, grinding and polishing
- ▶ Glass industry: Technical applications, optical glass, etc.
- ▶ Solar/wafer production: Saw cutting, grinding
- ▶ Paint booths: Maintenance of the overspray collecting water curtain
- ▶ ECM processes: Maintenance of the electrolytes
- ▶ High pressure water jet blasting: Cleaning and removal of coatings in the aerospace industry
- ▶ Reclamation: of gold, silver, copper, etc. from process liquids
- ▶ General sludge dewatering: Reduction of the residual water content prior to sanitary landfill disposal

Environmentally friendly consumables are the best path to optimum process water treatment

Rösler is the only supplier who offers a comprehensive equipment range but also produces ceramic and plastic media, mass finishing compounds, waste water and process water cleaners. Thousands of recycling and wastewater cleaning systems are successfully running at our customers all over the world. Why don't you take advantage of our knowhow?



Rösler Turbo-Floc® system

The proprietary Turbo-Floc® system from Rösler augments the mechanical cleaning performance of centrifuges with special process water cleaners, thus producing process water qualities that meet the most stringent requirements. The process water cleaners combine tiny solid particles into larger flocs, which can then be removed from the process water very effectively. The compounds required for the actual mass finishing process are not touched and are returned to the processing machine. Special cleaning agents even remove oil and emulsified substances from the process water.

Depending on the required water volume and the specific application we can offer automatic peeling centrifuges, type Z 1000 ASS II-Turbo, and semi-automatic basket centrifuges, type Z 800 HA Turbo-Floc® or Z 800 K HA Turbo-Floc®.

The result

- ▶ Very clean work pieces
- ▶ High process stability
- ▶ Long uptimes of the process water



Process water prior to treatment

Process water after addition of process water cleaner -
(The solid particles now combined into larger "flocs" are easier to separate and precipitate.)

Process water after passing through a centrifuge
(The solid particles were deposited as sludge on the wall of the rotating drum.)

Process water cleaner (recycling systems)

Liquid cleaners for recycling

Type	AR 8401	AR 8403	AR 8404	AR 8405	AR 8407
Function	Cationic polymers for effective process water recycling				
Usage	either as delivered or after dilution with water at the ratio 1:1 up to 1:10 about 0.1 – 1.0 kg/m ³				

Powder cleaners for recycling

Type	AR 7120	AR 7134
Function	Process water cleaners in powder shape allow the effective removal of oil and grease from recycling systems; minimal salt buildup in the process water	
Usage	Depending on the contamination 0.1 kg/m ³ - 1.0 kg/m ³	

Process water recycling systems

Centrifuges Z 800 HA Turbo-Floc® + Z 800 K HA Turbo-Floc®

Manual sludge removal

The semi-automatic basket centrifuges stand out with their excellent separation performance and their compact design allowing them to be placed in direct vicinity of the mass finishing equipment. The centrifuge itself, controls, dirty water and clean water tanks are all integrated into one unit. Of course, the heart of the system is the centrifuge designed and built by Rösler.



Impressive engineering

- ▶ Precision balanced drum made from aluminum; alternatively made from stainless steel for corrosive liquids
- ▶ Easy to maintain design of the filling system and the collecting tube
- ▶ Special guiding cone for optimum separation results
- ▶ Automatic discharge of residual liquid from the drum
- ▶ Special sludge basket for simple removal of the sludge
- ▶ Controls with modern PLC controller, fully installed and ready to run
- ▶ Feeding of the dirty process water by adjustable compressed air diaphragm pump (pulse controlled)
- ▶ Sturdy, reinforced plastic tanks made from high quality polyethylene
- ▶ Easily changeable pre-screen at the dirty water tank inlet
- ▶ Level indicator by float switch with "full" alarm
- ▶ Angled tank bottom for easy emptying out of the tank
- ▶ Stirrer built into the dirty water tank
- ▶ Separate clean water tank; optional
- ▶ Sturdy, wear resistant diaphragm pump technology
- ▶ Locking of the centrifuge lid electrically controlled
- ▶ Automatic water and compound replenishment dosing system; optional
- ▶ Turbo-Floc® package for the addition of process water cleaner; optional



Z 800 K HA Turbo-Floc® with dirty water and clean water tank



Z 800 HA Turbo-Floc® with dirty water tank

Type	Z 800 HA Turbo-Floc®	Z 800 K HA Turbo-Floc®
Max. rotational speed (RPM)	3,160	3,160
Max. "g" value	2,010	2,010
Max. sludge volume (l) basket capacity (kg)	15 22	15 22
Capacity ¹ (l/h)	100 - 1,200	100 - 1,200
Installed power (kW)	5.0	5.0
Average power draw (kW)	1.6	1.7
Dirty water tank (l)	250	340
Clean water tank (l)	-	400
Cooling of the process water	-	optional
Automatic water and compound replenishment dosing system	optional	optional

¹ With mass finishing process water: Depending on the load with solids and the desired cleaning effect

State: 08/2017

Compact centrifuge RZ 60 M-V-KB

Manual sludge removal

The semi-automatic 2-phase centrifuge is ideal for applications with low solid particle loads. They can be employed for mass finishing as well as for all kinds of other industrial liquids.

- ▶ Compact, movable unit
- ▶ Coated steel tank
- ▶ Easy to maintain design of the filling system and the collecting tube
- ▶ Special sludge basket for simple removal of the sludge
- ▶ Drum made from aluminum
- ▶ Combined dirty and clean water tank with feeding pumps
- ▶ PLC controls
- ▶ Locking of the centrifuge lid electrically controlled
- ▶ Plug & Play system



Type	RZ 60 M-V-KB
Max. rotational speed (RPM)	4,100
Max. "g" value	1,800
Max. sludge volume (l) basket capacity (kg)	1.8 3
Capacity ¹ (l/h)	100 - 400
Installed power (kW)	1.5
Dirty water/clean water tank (l)	25/35

¹ With mass finishing process water: Depending on the load with solids and the desired cleaning effect

State: 08/2017

Centrifuge Z 1000 ASS-II-Turbo

Automatic sludge removal

The special feature of the fully automatic recycling centrifuges is the automatic peeling of the sludge from the drum wall after the centrifugal cleaning cycle. The sludge simply drops into a sludge wagon below the centrifuge.



Type	Z 1000 ASS-II-Turbo
Max. rotational speed (RPM)	2,770
Max. "g" value	2,000
Max. sludge volume (l) Drum capacity (kg)	28 30
Capacity ¹ (l/h)	800 - 3,500 ²
Installed power (kW)	11
Average power draw (kW) ³	6.5
Dirty water tank (l) optional ³	700/1,000/2,000
Clean water tank (l) optional	700/1,000/2,000
Cooling of the process water	optional
Automatic water and compound replenishment dosing system	optional

State: 08/2017

¹ With mass finishing process water: Depending on the load with solids and the desired cleaning effect

² With a lower solid particle load 12,000 l/h

³ Higher volumes of liquids upon request

A technology that sets new standards

- ▶ Fully automatic operation, controlled by PLC
- ▶ Turbo-Floc[®] package for the addition of process water cleaner
- ▶ Vibration control of the centrifuge motor with automatic stop function
- ▶ Powerful main drive with speed control
- ▶ Precision balanced drum made from aluminum; alternatively made from stainless steel for corrosive liquids
- ▶ Feeding of the clean water to the mass finishing machine(s) by compressed air diaphragm pump
- ▶ Feeding of the dirty process water by adjustable compressed air diaphragm pump (pulse controlled)
- ▶ Easy to maintain design of the filling system and the collecting tube
- ▶ Electronically controlled linear movement of the peeling knife, made from wear resistant stainless steel
- ▶ Residual sludge pan with self-cleaning function, pneumatically actuated movement
- ▶ Movable sludge wagon, can be tilted for easy unload (optional with frame for big bag)
- ▶ Automatic water and compound replenishment dosing system / optional



Accessories for recycling systems

1. Constant temperature of the process water

A constant process water temperature is desirable for equipment and process reasons. With some mass finishing machines, especially with centrifugal disk finishing machines, the friction energy in the work bowl is transformed into heat, which has to be dissipated by the process water. High process water temperatures can cause deteriorating finishing results and can even cause damage to the processing equipment. Cooling systems, precisely calibrated to the equipment performance, prevent a dangerous temperature rise in the process water, ensuring a stable process.



2. Recycling tanks

The capacity of the recycling tanks is individually adapted to the required process water volume.

► **Combination tanks:**

A single tank assembly with two chambers for dirty water and clean water with a volume of 2 x 700 liters



Combination tank

► **Individual tanks:**

Separate dirty water and clean water tanks with volumes of either 2 x 1,000 liters or 2 x 2,000.



Individual tank

► **Technical details, combination and individual tanks:**

- Sturdy, reinforced plastic tanks made from high quality polyethylene
- Easily changeable pre-screen at the dirty water tank inlet
- Level indicator by float switch with "full" alarm
- Angled tank bottom for easy emptying of the tank
- Stirrer built into the dirty water tank; also available for the clean water tank (optional)
- Sturdy, wear resistant diaphragm pump technology
- Wide overflow channel for the internal cleaning loop

► **Pump (lifting) station:**

- For supply of the dirty water from the mass finishing machine to the centrifuge
- Sturdy tank with angled bottom (3 sides)
- Compressed air diaphragm pump controlled by the water level
- Screen for catching coarse solid particles
- Level indicator by float switch with "full" alarm



Pump (lifting) station

3. Rösler recirculation tank, type R... AB

For many mass finishing applications with low process water volumes a Rösler high performance centrifuge might not be the most economical choice. In these cases a recirculation tank can be a cost efficient alternative.

The dirty process water from the mass finishing machine is fed into the recirculation tank equipped with multiple cascades resulting in the precipitation/separation of metal and media fines. The clean water passing through the last cascade is returned to the mass finishing machine with a pulse controlled compressed air diaphragm pump.

Filling of the recirculation tank with water takes place with the simultaneous injection of the required compound.

Technical details:

- Sturdy, re-enforced plastic tanks made from high quality polyethylene
- Removable partitions facilitate the cleaning of the tank
- Adjustable compressed air diaphragm pump (pulse controlled)



Recirculation tank, model R 350 AB

Type	R 150 AB	R 350 AB	R 750 AB	R 1100 AB
Tank volume (l)	150	350	750	1,100
Suitable for waste water volumes (l/h)	up to 30	up to 70	up to 150	up to 220
Tank dimensions lxbxh (mm)	700 x 400 x 580	1,150 x 760 x 520	1,990 x 970 x 520	1,990 x 1,310 x 520
Inlet height dirty water (mm)	450	440	440	440

State: 10/2013

Wastewater cleaning system AWA...

Chemical wastewater treatment systems based on the principle "precipitation/flocculation" are rounding off our product portfolio. They are employed whenever process water recycling cannot be utilized: Processing of multiple metals in a mass finishing system, particularly high quality requirements for the surface finish or mass finishing processes with acidic compounds.

How it works

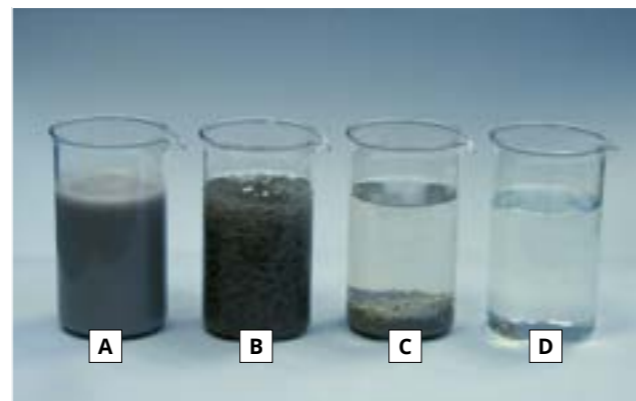
The dirty water is cleaned in batches by precipitation and flocculation:

Stage A: Collection of a batch of dirty water

Stage B: Treatment by precipitation and flocculation

Stage C: Sedimentation of the flocs

Stage D: Filtration/sludge dewatering, possibly recycling



Treatment process

For the removal of the contaminations from the dirty water to below the legally permissible limits we offer cleaning agents that are individually adapted to the requirements of our customers:

- ▶ Flocculants
- ▶ Flocculation support compounds
- ▶ Neutralizing agents
- ▶ Combination products

These products come in liquid or powder form.

Semi-automatic systems AWA...C-SF und AWA...C-FP

The product type C-SF und C-FP is ideal for effective precipitation/flocculation of small dirty water volumes, which do not have to be automated but require a high degree of process safety.

Buffering and treatment takes place in a single, low profile tank that allows the direct gravity feeding of the liquid from the mass finishing machine into the tank.

Dewatering of the sludge can be done with filter bag or filter press.

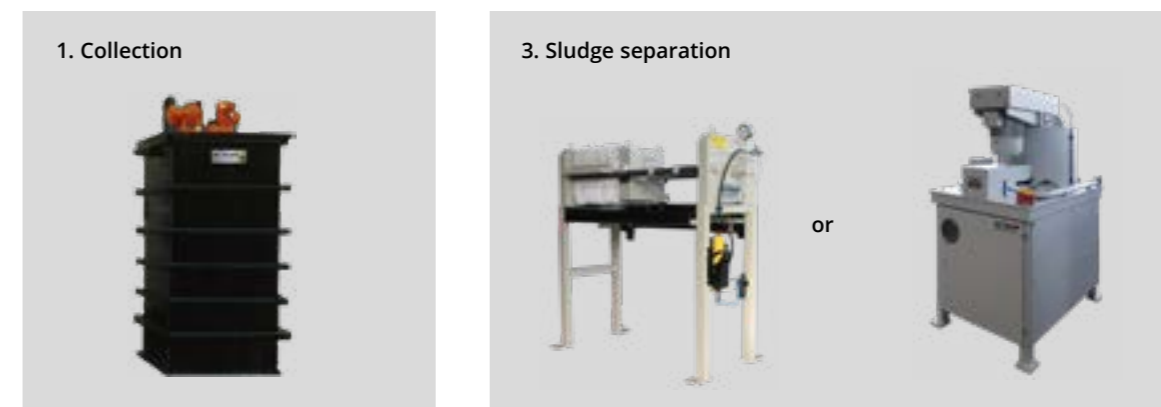


AWA 500 C-SF

Automatic systems AWA...K-FP und AWA...K

For continuous dirty water volumes over 500 liters/h we recommend the utilization of automatic treatment systems.

The PLC controller monitors and controls the supply of dirty water, its neutralization, the dosing of the flocculant, the sludge dewatering and the final control filtration of the clean water. Dewatering of the sludge can take place with chamber filter press or centrifuge.



Type	Performance	Thin sludge	Filter size/ Quantity of filter plates
Semi-automatic	AWA 500 C-SF	500 l/batch	Dual bag filter 2 x 120 l
	AWA 1000 C-SF	1,000 l/batch	Dual bag filter 2 x 120 l
	AWA 1000 C-FP	1,000 l/batch	Filter press 4/15/30 St. ¹
	AWA 2000 C-FP	2,000 l/batch	Filter press 4/15/30 St. ¹
Fully automatic	AWA 1000 K-FP	1,000 l/h	Filter press 4/15/30 St. ¹
	AWA 2000 K-FP	2,000 l/h	Filter press 4/15/30 St. ¹
	AWA 4000 K-FP	4,000 l/h	Filter press 6/15/25 St. ¹
	AWA 1000 K-RZ	1,000 l/h	Centrifuge RZ 150 A -
	AWA 2000 K-RZ	2,000 l/h	Centrifuge RZ 150 A -
	AWA 4000 K-RZ	4,000 l/h	Centrifuge RZ 150 A -

¹ Volume of filter plates 3,2 l or 10 l



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