

RÖSLER FINISHING SYSTEMS WITH CONTINUOUS WORK PIECE FLOW –

Efficient surface finishing with a high degree of automation

Modern continuous flow mass finishing systems can be easily integrated into manufacturing operations with indexing or continuous work piece flow. The highly intensive finishing process and a high work piece throughput ensure perfect results and high cost-efficiency.

The machines with rectangular, round or spiral-shaped processing channels are equally effective as stand-alone surface finishing cells or as part of integrated manufacturing systems.

Functional description

A suitable loading system transfers the raw work pieces in continuous flow into a U-shaped processing bowl that is filled with grinding or polishing media. The induced vibration causes a spiral movement of the media/work piece mix and an intensive “rubbing” effect between the media and work pieces. Operational criteria like pass-through time or the grinding, respectively, polishing intensity can be adjusted with parameters such as inclination of the processing bowl, setting of the imbalance weights and RPM of the vibratory drive system. After completion of the finishing process the processing media and finished work pieces are separated from each other in an integrated separation station. During the separation phase the work pieces are also rinsed off before they are transferred to downstream manufacturing operations.



Applications

Continuous flow systems offer not only high productivity and cost efficiency but also a high degree of automation. They are equally suitable for deburring, edge radiusing, surface grinding and ball burnishing of stampings, castings, forgings or machined components.



LINEAR CONTINUOUS FLOW INSTALLATIONS –

Design details

Equipped with a powerful Rösler vibratory drive and designed for continuous work piece flow, this machine type allows fully automatic mass finishing operations. Perfectly adapted equipment components and state-of-the-art electronic controls

guarantee excellent results and a high degree of reliability – even under the most difficult operating conditions.

1 Processing bowl

The welding construction with re-enforcing gussets is designed to withstand severe vibrations

- ▶ Annealed to relieve stress in the weldment
- ▶ Lining choosable out of wear-resistant rubber or polyurethane
- ▶ Dosing of the process water across the entire length of the processing channel
- ▶ Discharge of the process water with multiple large and easily replaceable bottom screens

2 Inlet chute for the processing media

A large inlet chute, firmly attached to the processing bowl, allows quick and safe return of the processing media into the bowl. The special chute design does not affect the usable length of the processing bowl, which ensures a high work piece throughput.

- ▶ Gentle media transfer due to minimal drop heights, also suitable for ceramic media

3 Special outlet chute

- ▶ The outlet chute, designed in line with fluid mechanics principles, can be individually adjusted for different finishing tasks, work piece shapes, sizes and weights
- ▶ Outlet chute in the processing bowl with patented media discharge gate

4 High-capacity vibratory screening machine

- ▶ Adjustable imbalance settings and RPM of the vibratory drive (optional)
- ▶ Multi-level screen decks; easy and quick screen change with no special tools
- ▶ Optional: Single level screen deck
- ▶ Optional: Integrated screen for discharging undersized media
- ▶ Optional: Magnetic separator
- ▶ Optional: inverted separation unit

5 Return of the media into the processing bowl

Easy adjustment to different media shapes and quantities. Transport system consists of the following components:

- ▶ Vibratory cross conveyor integrated into the separation unit. Equipped with special drain for residual process water
- ▶ Media return belt conveyor with integrated discharge system for residual process water
- ▶ Vibratory cross conveyor at the inlet of the processing bowl

6 Process water handling / pneumatic system

- ▶ Central supply station for process water and compound(s)
- ▶ Adjustable work piece rinsing system
- ▶ Rinsing system and process water supply managed by special control valves

7 Easy to handle equipment controls

State-of-the-art PLC technology allows fully automatic operation

- ▶ Administration of the processing programs
- ▶ Display of equipment faults and other messages
- ▶ Optional: Variable RPM of the various drive systems
- ▶ Optional: MPI interface for linking multiple machines
- ▶ Optional: System for the collection of manufacturing and equipment data

8 Safety enclosure

- ▶ Safety enclosures can be quickly disassembled and easily maintained. Designed in line with German accident prevention standards. Multiple inspection openings.
- ▶ Extra: Inspection platform for the processing bowl

Inclination system for the processing bowl

- ▶ Inflatable air cushions absorb the vibration from the processing bowl – no vibration transfer to the machine base!
- ▶ Variable inclination of the processing bowl allows processing times between 4 and 30 minutes
- ▶ Special control system for the inclination of the processing bowl
- ▶ Homogeneous and optimal spiral movement of the media/work piece mix over the entire length of the processing bowl

Change of the processing media

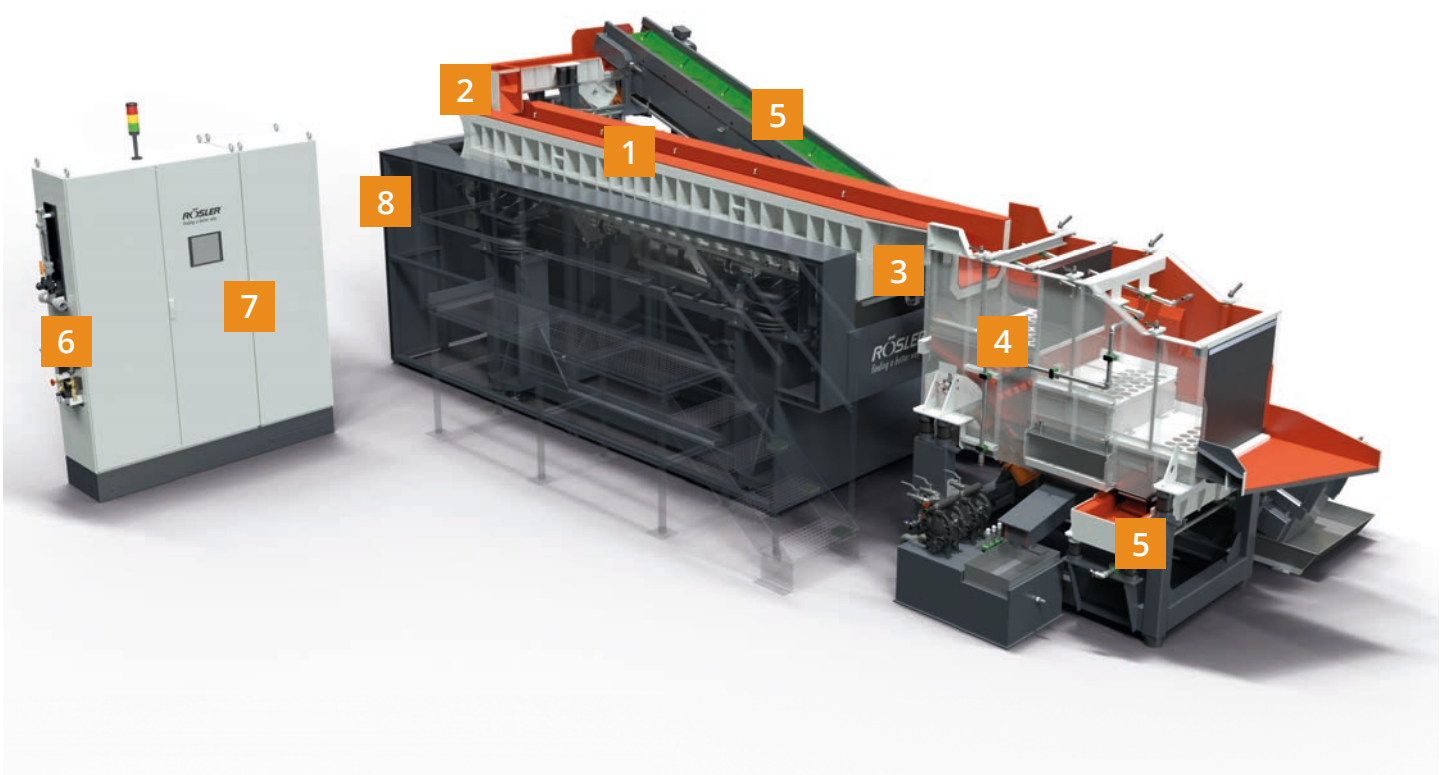
- ▶ Optional: Media discharge belt for transferring the media from the processing bowl to a storage bin

Vibratory drive

- ▶ Powerful Rösler vibratory motor
- ▶ Drive shaft with adjustable imbalance weights across the entire length of the processing bowl
- ▶ On-demand fully automatic, electronically controlled supply of lubricants to the vibratory drive

Machine base frame

- ▶ Torsion resistant, sturdy weldment, annealed for stress relief
- ▶ Machine placed on vibration absorbing pads

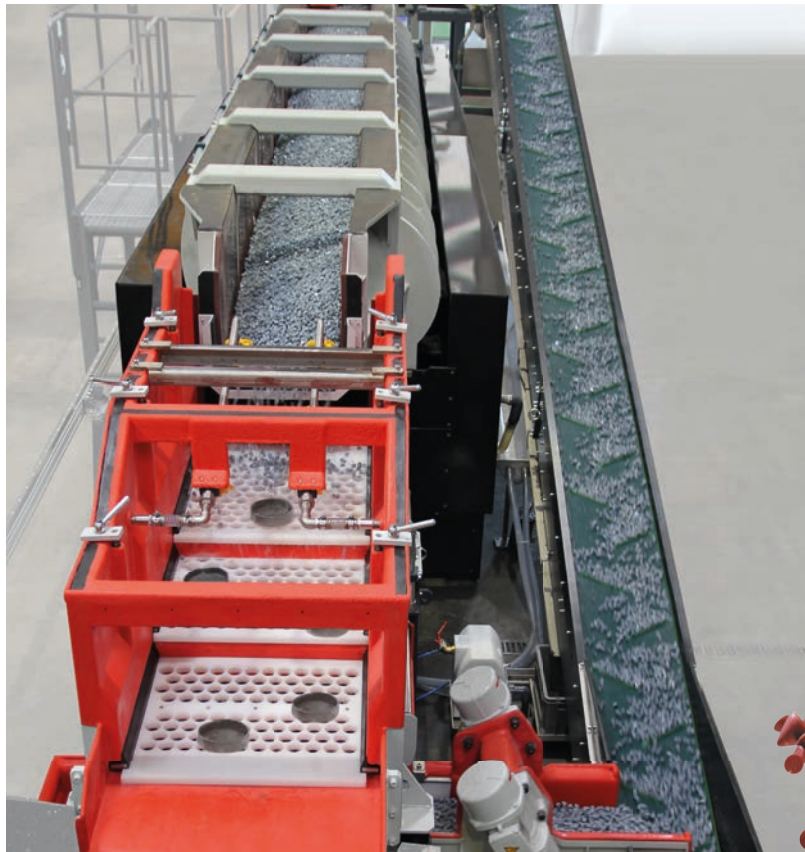


THE PROCESSING UNIT –

Optimized to the last detail – perfect results

At the center of the Linear continuous flow installation is the U-shaped processing bowl – with one curved side wall. This specific shape ensures a perfect movement of the media/work piece mix and guarantees excellent finishes in compliance with the strictest quality requirements. The outlet chute of the

processing bowl can be adapted to different finishing tasks, for example, for treating large, bulky and heavy work pieces.

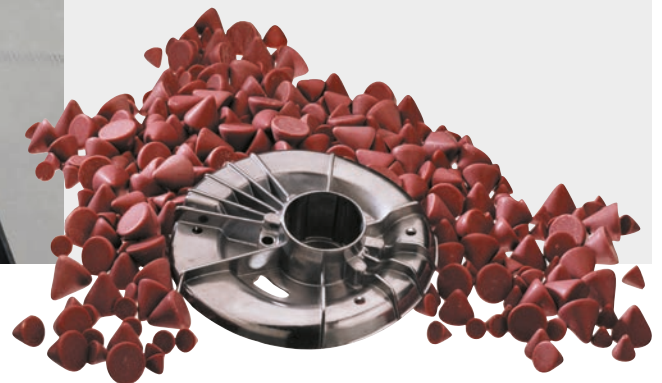


Excellent engineering

Step-free inclination of the processing bowl as well as variable settings of the imbalance weights and motor RPM allow a wide range of processing times. For example, a larger bowl inclination results in faster pass-through times.

The equipment performance is determined by the following machine parameters:

- ▶ Size of the processing bowl
- ▶ Inclination angle
- ▶ Vibration intensity ("amplitude") and RPM



Clean work pieces – minimal consumption of valuable resources

While being separated from the media in the separation unit, the finished work pieces are simultaneously rinsed off with cleaned process or fresh water. The multiple use of the process water – for the finishing process and for the rinse operation – saves valuable water resources (Öko-Plus water cleaning system).

Programmable travel times through the processing bowl

Sensors monitor the inclination angle of the processing bowl. This allows calling up individually adjustable processing times at the PLC.



Horizontal position of the processing bowl – medium processing time



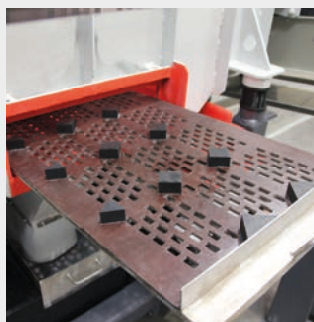
Inclination from rear to front – faster processing times



Inclination from front to rear – longer processing times

Reliable undersized media discharge

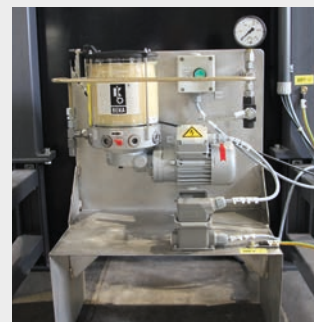
An insertable undersized media screen discharges worn, small media that could get lodged in the work pieces. Optimal accessibility and the design of the self-cleaning screen ensure excellent functionality and guarantee an optimal media mix in the processing bowl.



Undersized media screen

Optimal maintenance

On-demand supply of lubricants to all motor bearings, electronically controlled by the maintenance software in the PLC

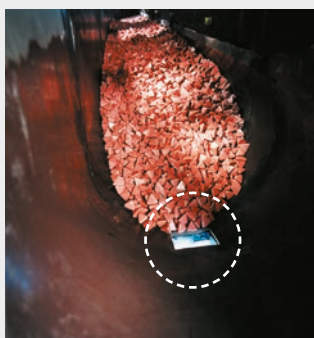


Central lubrication system equipped with progressive distribution

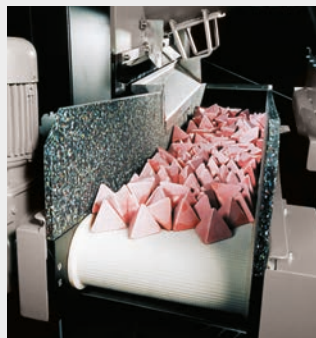
Minimal setup times

The media exchange system, in combination with the inclination feature of the processing bowl, allows a quick exchange of the processing media.

Media exchange



Discharge opening



Conveyor belt for media discharge

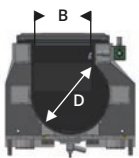
Safe operation

Upon special request we supply noise absorbing cabins that are custom engineered to your individual space requirements. They serve as protection against all equipment hazards and help to significantly reduce the ambient noise level.

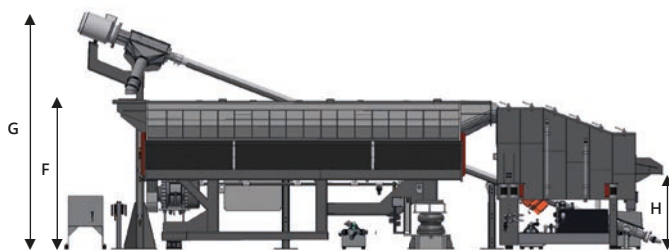
Model range – Linear continuous flow installations KP (3,000 RPM)

Specifications

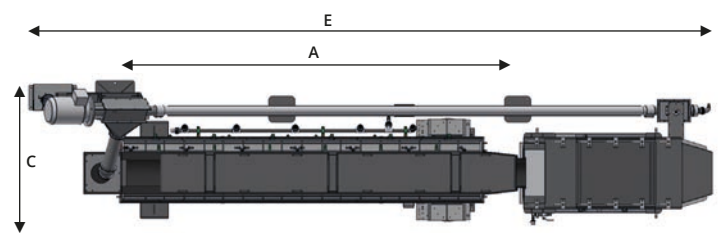
Model	R 350/4400 DA/KP	R 350/6400 DA/KP
A (mm)	4,400	6,400
B (mm)	300	300
C (mm)	1,560	1,510
D (mm)	350	350
E (mm)	7,630	9,700
F (mm)	1,870	1,960
G (mm)	3,050	2,825
H (mm)	990	970
Total installed power (kW)	24	24
Power vibratory drive (kW)	18.5	18.5



Cross section processing bowl



Side view



Top view