

## **Surface Finishing Machines and Systems**

For Metal and Plastic Industry



Vibratory, Centrifugal and Belt Drying Machines

Round and Trough Vibratory Finishing Machines





Centrifugal Disc **Finishing Machines** 

Physical and Chemical Process Water Recycling Systems



Continuous and Linked

Automation Systems

## Consumables:

- Ceramic Media Plastic Media
- Stainless Steel Media
- Drying and Polishing Granules
- Liquid, Paste and Powder Compounds



## **About Kromas:**

The pioneering that Kromas has started on surface finishing machinery is continued by developing new systems and technologies and making them available to the industry.

Kromas products are successfully used in more than 10.000 companies in 77 countries in 5 continents.

More than 3000 surface processes developed by Kromas are being successfully implemented, without alternatives.

Other than providing the customers with successful results, the systems, machinery and process solutions offered by Kromas also provides high productivity, lower costs and competitive advantage.

Kromas has an advanced R&D infrastructure and has developed many patented products.

Kromas has the ISO 9001 quality management system certification. Kromas products bear the CE marking, and TSE-EN norms and standards are applied during their production. Furthermore, Kromas can also produce in compliance with the standards of other countries, which apply different standards.

Kromas's exemplary technical solutions are being monitored and used by many companies.

## **PRODUCT RANGE:**

## **Surface Finishing Machines and Systems**

- Round Vibratory Machines
- Multichannel Continuous Finishing Systems
- Trough/Tub Vibratory Machines
- Linear Tub Vibratory Machines
- Vibratory and Belt Drying Machines
- Centrifugal Disc Finishing Machines
- Centrifugal Drying and Degreasing Machines
- Surface Finishing Barrels
- Surface Finishing Automation Systems
- Industrial Waste Water Treatment and Recycling Systems
- Thermo-Diffusion Zinc Coating Systems
- Surface Ageing/Tumbling (Antique) Machines
- Rounding and Polishing Machines
- Natural Stone, Ceramic and Glass Mosaic Production Lines
- Tile-Strip and Slab Reinforcement & Surface Filling Automation Systems
- Washing and Drying Systems

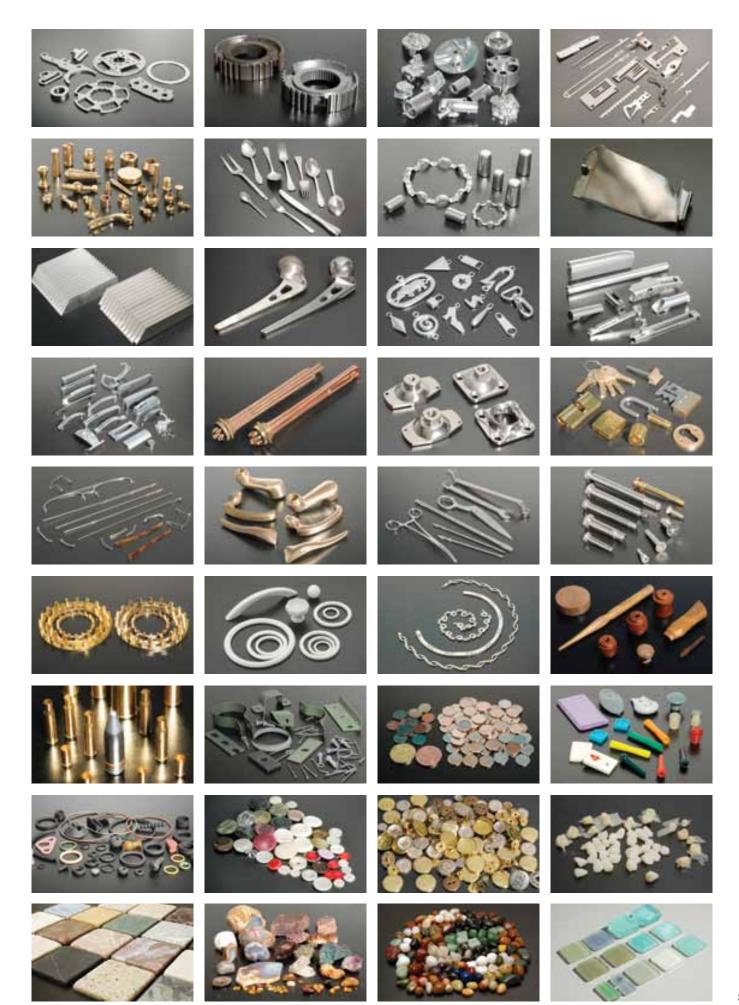
## **Surface Finishing Consumables**

- Ceramic Media
- Porcelain Media
- Plastic Media
- Stainless Steel Media
- Drying and Polishing Granules
- Liquid, Paste and Powder Compounds

PLEASE CONTACT US FOR CONSULTATION, SAMPLE ANALYSIS AND CUSTOMIZED PROCESS DEVELOPMENT.

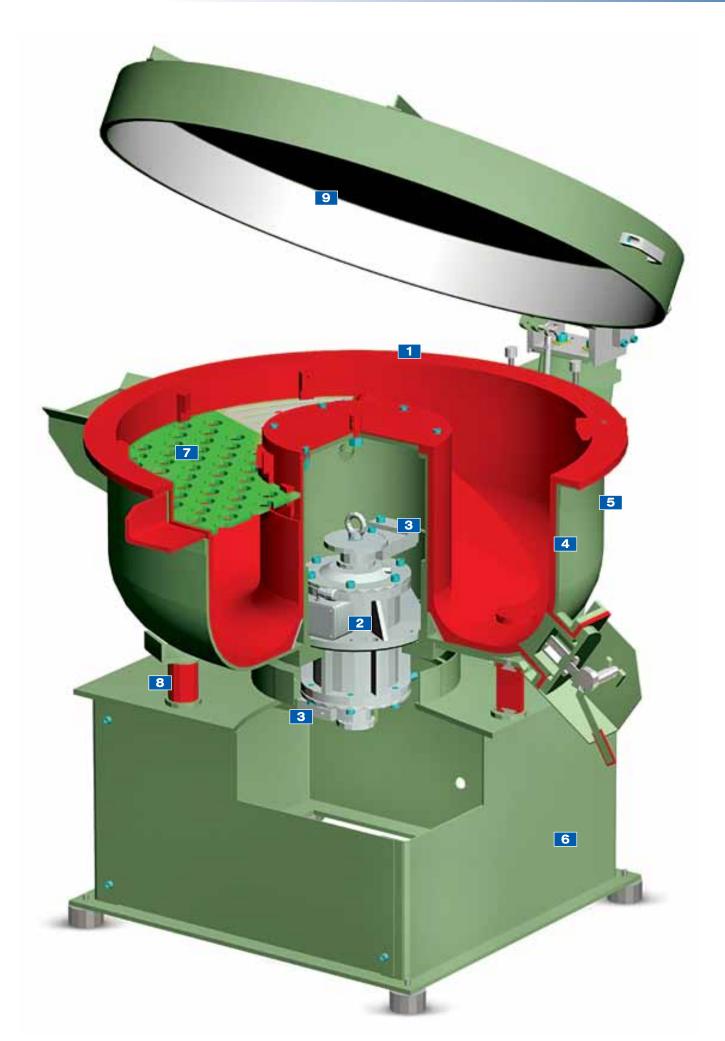
"Kromas products are successfully used in more than **10.000 companies** in **77 countries** in **5 continents.**"













 LINING: The machines are lined with high quality elastomer polyurethane.



2 VIBRATION MOTOR: Our own design direct drive steel cased motors are renowned for their robustness and low maintenance. They use INA, SKF and FAG bearings and auto self lubrication system.



3 VIBRATION ADJUSTMENT: Vibration amplitude can be observed from the vibration gauge on the bowl. Required vibration can be obtained by adjusting the weights. If an optional frequency converter is installed vibration and processing speed can also be controlled from the control panel.



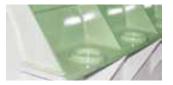
4 HEAT TREATMENT: All vibrating parts, in particular the metal bowl, are heat treated (normalized) during construction to avoid any stress fractures or metal fatigue due to the vibratory process.



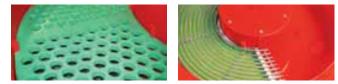
**5 SHOT PEENING:** All metal surfaces are shot peened for the added strength prior to lining and painting.



6 PAINT: After painting with epoxy primer and epoxy steel filler, the surfaces are than sprayed with two coats of epoxy paint and then oven treated.



7 SEPARATORS: Media separators are made of long lasting polyurethane. Media separators for broken or undersized media are made of Stainless Steel. Separators can be changed easily and quickly in less than a minute. (See page no. 10)



8 SUSPENSION: Long life PU and steel springs are used in the vibratory machines. PU springs are used in models VM 125 and VM 250.



**9 NOISE LEVELS:** The machines are the quietest vibratory machines on the market and if necessary optional acoustic lid or sound isolation cabin can be supplied.



**ELECTRIC CONTROL PANEL:** Designed and manufactured using the best materials and are suitable to CE, EN, IP Norm and standards.



**CORROSION PROTECTION:** All parts of the machine are protected against corrosion.

**PRODUCTION STANDARDS:** All machines and equipments carry the CE Mark (European Union Safety Standard), VDE-IP Electrical Standard, ISO 9001 Quality Management System.







VM 125 Capacity: 125 liter











Kromas vibratory finishing machines are all around, flexible and efficient machines. Variety of industries are using Kromas machines successfully on daily basis. Vibratory finishing machines are used for finishing of metal, plastic, ceramic, stone, glass, wood and rubber products. Vibratory finishing process includes: deburring, radiusing, polishing, descaling, deflashing, degreasing, cleaning, smoothing etc.

Small or large, light or heavy, parts are successfully processed in variety of Kromas vibratory machines. Kromas customers benefits from large variety of material handling, automatic solution, drying and waste water treatment systems available to enhance their new or existing processes.





VM 500 Capacity: 500 liter



VM 800 Capacity: 800 liter









Kromas efficient process solution includes test laboratory centers in Europe, North America and Asia. Results from tests trials allow Kromas to offer to customers, best optimal machine systems, process and media. Selecting the correct machines by customer production requirement, use of high quality materials, high quality workmanship and engineering guarantee a low maintenance cost and long service life.

Fully automatic vibratory finishing









Kromas round vibratory machines are perfectly suited for automated, interlinked surface finishing process. Machines have distinctive process channel with spiral bottom with fixed incline. For easy discharge of work pieces, machines are fitted with manual or pneumatically activated separation flap.

Kromas offer advantage with regard to productivity, efficiency and simplicity of operation with magnetic drum or magnetic belt separation of ferrous finished parts. Manual or pneumatic noise protection covers are available and listed as optional machine equipment.



Vibratory machine with magnetic belt separation, rinsing station and belt dryer



Carousel Vibrator: Round vibratory machine with paddle wheel divider





Kromas round vibratory machines of larger capacity (1000 Liter +) have reinforced working bowls and machine bases with extra gussets, bowls are shot peened and stress relieved for the added strength.

All work bowls have minimum polyurethane liner wall thickness of 20 mm. Variable speed (machines equipped with Frequency Converter) of vibratory motor is available and listed as optional machine equipment.



Vibratory machine with magnetic drum separation, waste water treatment system and round vibratory dryer

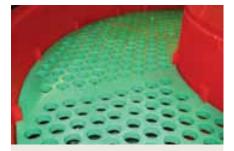












Changeable separation screen



Step separation screen



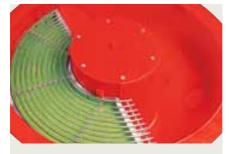
Special separation screen



Undersized media screen



Magnetic belt separator



Stainless steel rod separation screen



Without separation



Magnetic drum separator



Without separation / Set PU Lining





Pneumatic flap



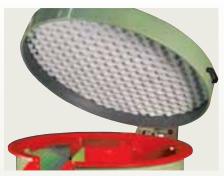
Compound dosing pump



Ramp and flap with actuator



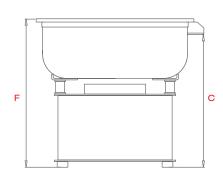
Metering system for compounds

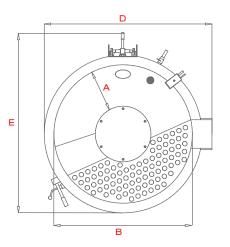


Manual and pneumatic acoustic lid



Control panel





				ROUND VI	BRATORY M	ACHINES				
Machine Type			VM 125*	VM 250	VM 500*	VM 800	VM 1000	VRM 2000	VM 3200	VM 4000
Capacity	liter		125	250	500	800	1000	2000	3200	4000
Polyurethane Thickness	mm		20	20	20	20	20	20-30	20-30	20-30
Steel Thickness	mm		6	8	10	10	10	10	10	10
Process Area Width	mm	Α	210	290	370	430	440	690	762	910
Inside Diameter	mm	в	700	970	1290	1560	1650	1841	2325	2590
Discharge Height	mm	С	950	930	1030	1040	1235	1220	-	-
Width	mm	D	776	1100	1406	1700	1868	1960	2500	2800
Length	mm	Е	920	1250	1590	1895	1940	1960	2550	2700
Height	mm	F	1050	1060	1235	1340	1395	1400	1575	1585
Weight	kg		272	490	1153	1900	2110	1980	3285	4700
Motor Cycle (at 50 Hz)	rpm		1500	1500	1500	1500	1500	1500	1500	1500
Motor Power	kW		0,75	2	4	6	6	7,5	22	30

\* VM 125 and VM 500 machine version are available for ball burnishing process with stainless steel media.









Kromas ATC 200 Multi Chanel vibratory machine is example of impressive flexibility, all around applicable spiral type troughfeed system for continuous vibratory process.

Singular part loading allow "no contact" of the parts during the process. This is important for the sensitive/ high value parts.

ATC 200 is used across all industries that require short cycle times and increased productivity.





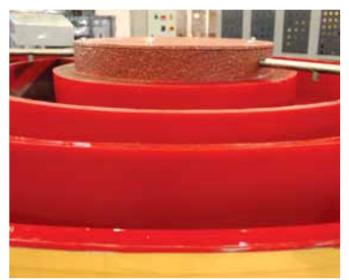


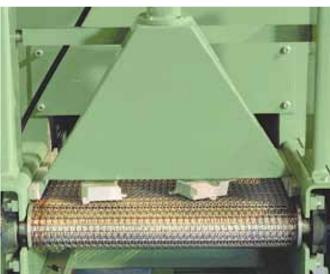


ATC 200 is used for continuous deburring, polishing, grinding and radiusing of stamped, forged, die-cast and machined parts. Kromas Multi Chanel machines are high performance machines that require minimum of space.

Kromas offers a full scale range of material handling which can be integrated with washers, dryers, separators etc. into the complete automated surface finishing systems.













From 20 litres to 2200 litres and more, Kromas is manufacturing Trough Vibrators to fit your process application. Parts up to 2200 mm and bigger, can be processed in plastic or ceramic media, or with ball burnishing vibratory process.

Trough vibrators are ideal for processing of heavy, long, bulky or delicate components which allow unlimited application possibilities.



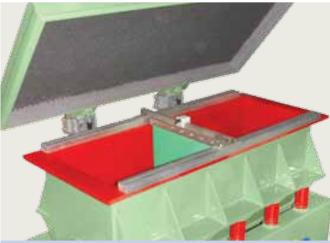






Drive motors are mounted under the machine, directly to the bottom of the processing tub. Also, larger capacity units are driven by two motors mounted on the side of the tub. Drive motors and imbalance units are connected with unique vibration absorbing couplings.

Processing Tub can be divided into individual compartment. This is important for processing of delicate parts. Compartment can be filled with different media for step processing as well. Acoustic protection/ Sound covers are available and listed separately.



Through vibratory machine with acoustic lid and movable divider



Ball burnishing process



Changeable PU divider







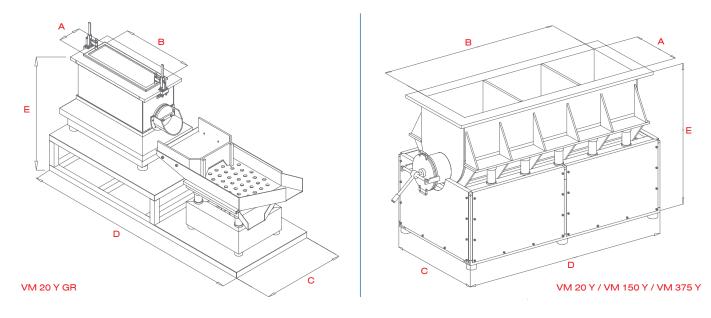
Kromas Vibratory Tub/Trough machines are used in variety of industries. From the Automotive and Aerospace parts, to the Natural Stone and Wood industry.

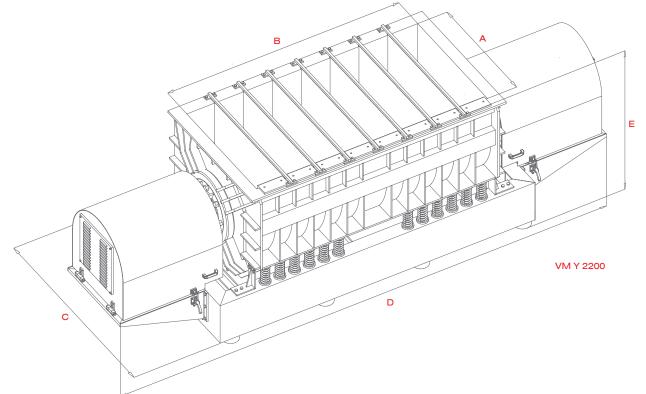
Kromas robust design of vibratory tub machines is recognized in "Stone" finishing industry. Tiles and pavers of various materials, size, and thickness are processed in these machines with short cycle time, desired finish and customer satisfaction.









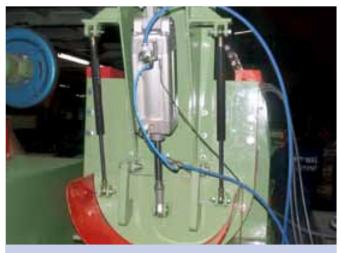


			TROUGH	VIBRATORY MACH	IINES			
Machine Type			VM 20 Y*	VM 20 Y GR*	VM 150 Y*	VM 375 Y*	VM Y 2200*	
Capacity	liter		20	20	150	375	2200	
Polyurethane Thickness	mm		15	15	15	15	15	
Process Area Height	mm		235	235	480	570	985	
Process Area Width	mm	Α	170	170	365	500	1100	
Process Area Length	mm	в	530	530	870	1500	2200	
Width	mm	С	600	600	908	1191	2350	
Length	mm	D	710	1600	1149	1799	4830	
Height	mm	Е	782	965	1095	1125	1510	
Weight	kg		125	200	496	1002	4710	
Motor Cycle (at 50 Hz)	rpm		1500	1500	1500	1500	1500	
Motor Power	kW		1	1,1	1,1 / 1,5	4/6	22	

\* All through vibratory machines have versions available for ball burnishing process with stainless steel media.



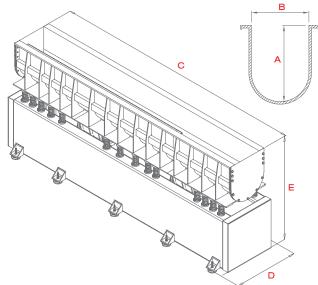




Optional pneumatic discharge



Kromas linear vibratory tub machines allowing unlimited application possibilities. Kromas is manufacturing systems with automatic parts unloading and separation process. Manual and pneumatic noise protection covers are listed as optional machine equipment.



	Capacity	Polyure- thane Thickness	Process Area Height	Process Area Width	Process Area Length	Width	Height	Length	Weight	Motor Cycle (at 50 Hz)	Motor Power
	liter	mm	mm	mm	mm	mm	mm	mm	kg	rpm	kW
Machine Type			Α	В	С	D	Е				
LNR 2000	450	20	594	448	2000	1074	1200	2445	1730	1500	6
LNR 4000	900	20	594	448	4000	1074	1200	6000	4500	1500	11

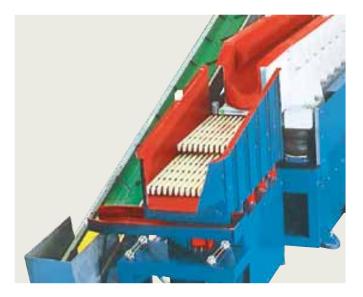




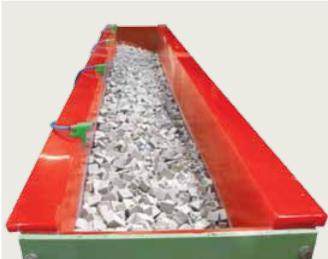
LNR 6500 Continuous Finishing System

High throughput capacity, high profitability and unlimited automation possibilities are main characteristic of Kromas LNR vibratory continuous finishing system.

It is used in high volume production for finishing, deburring, radiusing in stamping, forging, die-casting processes. Kromas LNR sysem provides unmatched reliability in operation.













Vibratory Drying Machines are used for drying components/parts, after the vibratory finishing process. Round dryer is filled with drying media (corn maize of various sizes).

Wet parts are loaded continuously into the machine and travel around trough the process channel in pre heated drying media. Parts are separated via separation screen. Dryers with forced hot air are used for one cycle drying of parts.







Vibratory step/layer dryer with hot air blower







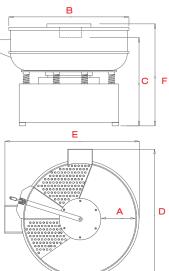
Dust lid for vibratory dryers.



	ROUN	ID V		DRYERS		
Machine Type			VM 125 K	VM 250 K	VM 500 K	VM 800 K
Capacity	liter		125	250	500	800
Polyurethane Thickness	mm		PU SPRAY	PU SPRAY	PU SPRAY	PU SPRAY
Steel Thickness	mm		6	6	8	10
Process Area Width	mm	Α	242	320	410	470
Inside Diameter	mm	в	780	1025	1390	1660
Discharge Height	mm	С	760	870	1000	875
Width	mm	D	890	1175	1500	1770
Length	mm	Е	780	1245	1620	1895
Height	mm	F	950	1100	1140	1088
Weight	kg		280	430	1120	1770
Motor Cycle (at 50 Hz)	rpm		1500	1500	1500	1500
Motor Power	kW		0,75	2	4	6
Heating Power	kW		1,8	3	4,5	6

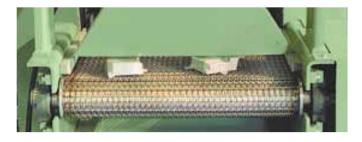






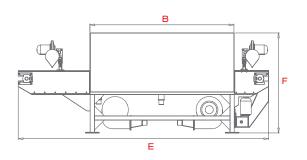




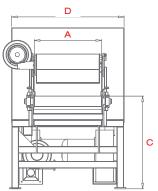


Kromas belt dryers are used for drying of large and small parts that are prone to damage. Parts that have many holes of different sizes and heavy parts are ideal for this type of machine. Drying is achieved by temperature controlled hot air which is recirculated in drying chamber.





22



	Conveyor Speed	Process Area Width	Process Area Length	Discharge Height	Width	Length	Height	Weight	Motor Cycle (at 50 Hz)	Total Power
	m/min.	mm	mm	mm	mm	mm	mm	kg	rpm	kW
		Α	В	С	D	Е	F			
TNL 4000	1 - 4	600	2000	828	1000	3600	1440	1740	1500	48





Infrared and UV Belt Dryers

## Infrared (IR) Belt Drying Oven:

High technology ovens equipped with infrared lamps, ensure 100% drying.



## Ultraviolet (UV) Belt Drying Oven:

Systems equipped with UV (Ultraviolet) lamps are used for curing UV based chemicals.







Automatic chemical spray coating and UV curing system











Kromas SM Series of centrifugal disc finishing machines are high energy machines. These machines have 10X higher productivity when compared to round vibratory finishing machines.

SM Machines have universal application, from high gloss polishing to aggressive deburring and radiusing. SM machines are stand alone processing machines. Machines can be equipped with manual tilting or electric tilting motor for easy parts unloading. Low machine configuration allows for easy visual control of a machine finishing process.









Kromas SM machines are fixed pivot centrifugal disc machines.

At the end of the centrifugal disc finishing process, the system pivots by 140°, thus transporting the mass of media and work pieces/parts onto the screening machine. There, separation takes place.

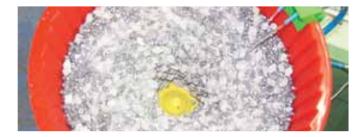
When the SM centrifugal disc machine pivots back to processing position it could be refilled with media and parts manually or by automated system.

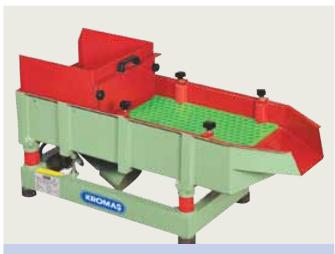


SM machine with media and parts separator









VE 50 Media and parts separator







Kromas SM centrifugal disc finishing machines achieves grinding results which are 10 to 30 times higher when compared to the round vibratory finishing machines. SM machines are used for variety of materials/parts processed.

From ferrous to non ferrous, plastic or glass, SM machines offer unsurpassed quality process measured by customer's economic benefits.





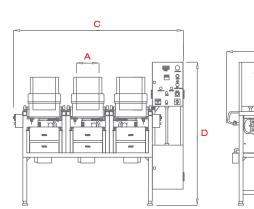








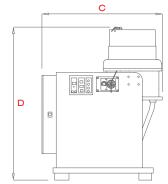




SM 14 / SM 2x14 / SM 3x14

в

B



SM 50 / SM 100 / SM 200 / SM 400

	CENTRIFUGAL DISC FINISHING MACHINES											
Machine Type			SM 14	SM 2x14	SM 3x14	SM 50 C	SM 50 BR	SM 100 R	SM 200	SM 400		
Capacity	liter		14	2x14	3x14	50	50	100	200	400		
Polyurethane Thickness	mm		20	20	20	20	20	20	20	20		
Steel Thickness	mm		10	10	10	10	10	10	10	10		
Process Area Width	mm	Α	280	2x280	3x280	425	425	585	670	940		
Width	mm	в	1020	1500	3167	950	1180	1380	1720	2020		
Length	mm	С	1140	1140	1140	1105	1365	1380	1590	2400		
Height	mm	D	1600	1600	1600	1530	1315	1510	1650	1910		
Weight	kg		150	300	450	303	385	790	985	1500		
Motor Power	kW		1,1	2,2	3,3	3	3	4	5,5	15		







Centrifugal disc finishing systems are easy to operate and highly efficient and productive. Long life of the spinner is guaranteed by highly wear-resistant polyurethane. Spinner feature special geometry that enhances best optimal movement of parts and media.

Kromas SM 1X100 Fully automated centrifugal disc finishing system for coin blank processing is engineered and developed for the cleaning of coin blanks before and after the annealing process or for the polishing and cleaning treatment while producing plated coins.









Kromas SM 1X100 Fully automated centrifugal disc finishing systems are particularly well suited for processing of smaller and delicate parts as chainsaw links and cutters, springs, washers, pins, rivets etc. These systems are used for surface grinding, polishing, deburring and radiusing of machined parts, stampings or castings. High level of automation, short processing times are major benefits that Kromas SM machines provides.

Kromas SM 2X100 is a fully automated dual/tandem centrifugal finishing system for coin blank processing with integrated system dryer.















Kromas SK 25 and 50 liter capacity centrifugal dryers are used for stain free drying and degreasing of small to medium size parts and preventing parts of being tangled.







	Capacity	Inside Diameter	Width	Length	Height	Weight	Centrifuge Cycle	Motor Power	Motor Cycle (at 50 Hz)	Heating Power
	liter	Ømm	mm	mm	mm	kg	rpm	kW	rpm	kW
SK 25K / SK 25Y	25	420	645	650	920	140	480	0,37	1500	2
SK 50K / SK 50Y	50	470	710	720	985	160	480	0,55	1500	2





Kromas DM 400 surface finishing and polishing barrel is open/closed ended special type of barrel finishing machine in which the polyurethane lined barrel is open/closed at the end and is mounted cantilever on a tilting shaft. DM 400 is a versatile machine suitable for wet or dry barrel finishing processes.

These machines have been designed for the surface finishing of plastic and metal parts. In particular they are used for smoothing, polishing, and deburring of small and medium sized components by means of plastic, ceramic, wood media.









	Capacity	PU Thickness	Steel Thickness	Rotation Motor Power	Unloading Motor Power	Motor Cycle (at 50 Hz)	Centrifuge Cycle	Width	Length	Height	Weight	Water Inlet
	liter	mm	mm	kW	kW	rpm	rpm	mm	mm	mm	kg	bar
DM 400	400	15	6	2,7	1,1	1500	20-40	1240	2168	1918	920	2-4







## Recycling Compact Waste Water Treatment System

- Complete removal of residual paritcles from the waste water used in surface finishing processes e.g., deburring and polishing etc.
- Cleaning of cooling liquids from delicate treatment processes of metals, optical glasses, stainless steels and ceramics
- Seperating of non-requested oils from emulsions, process water and other liquids
- Retrieval of precious metals, hard metals and alloys

## **Process content:**

This is the physical treatment process of waste water that comes from the source of waste water. System works with neutral waters (between pH 6,5-9,5)

## System processes:

- Flocculation
- Filtration
- Anti-foaming
- Disinfection







## **Applications:**

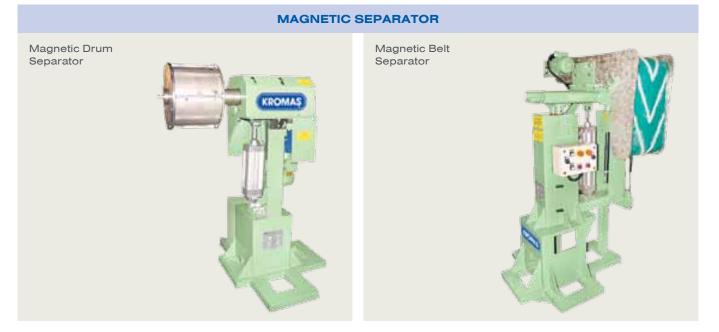
These systems are produced to work with vibratory surface finishing machines, centrifugal surface finishing machines and barrel type machines as a standard. As optional, It can be also prepared as a project for the waste water that occures in different industries.

## **Optionals:**

- Chemical Treatment
- Microfiltration
- Automatic Sludge Discharging Unit

PROCESS WATER RECYCLING SYSTENS									
Machine Type		ARS 25	ARS 100						
Capacity	liter/hour	300	1200 - 2000						
Water Tank Capacity	liter	60	400 + 450						
Sludge Container Capacity	kg	2,5	14						
Max. Clean Water Outlet Pressure	bar	0,5	0,5						
Separation Factor	g	1800	2000						
Centrifugal Speed	rpm	4100	3000						
Motor Power	kW	1,5	5,5						
Total Power	kW	2,2	6						
Air Inlet	bar	-	6						
Dimeansions	mm	680 x 750 x 800	1750 x 2500 x1600						
Total Weight	kg	160	600						
Control Unit	-	Semi Automatic	Automatic (by PLC)						
Dosing of (Process) Chemicals	-	Optional	Automatic						
Disinfections	-	Optional	Optional						
Filtration	-	Centrifuge Filter	Centrifuge Filter						
Foam Removal	-	Optional	Automatic						
Ratio of Water Recycling	%	95	95						





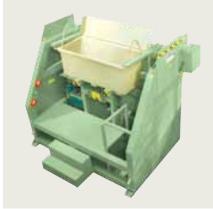
## HOPPER ELEVATOR LOADING SYSTEMS

CHN-BUN 150 Chain Driven Hopper Elevator Loading System



CHN-BUN 250 Chain Driven Hopper Elevator Loading System HID-BUN 350 Hydraulic Hopper Elevator Loading System





## **VIBRATORY SEPARATORS**

VE 14 Vibratory Separator

VE 50 Vibratory Separator VE 75 Vibratory Separator VE 400 Vibratory Separator











# TNY 2000 Belt Washing Machine TNY 3000 Belt Washing Machine

## **FEEDING & LOADING CONVEYORS**



PVC Belt Conveyor

SM 6 Centrifugal Disc Finishing Machine



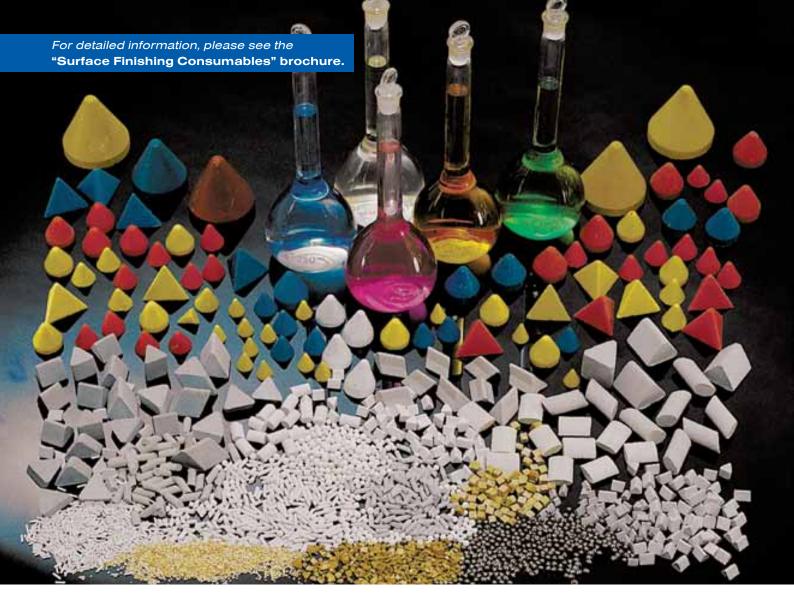
## **OTHER MACHINES**

DP 4 Polishing Drum



Universal Placeable Hot Air Blower for Conveyors







## **Ceramic Media:**

Ceramic Grinding media are used for the surface finishing of hard ferrous materials such as iron, steel and its derivatives.



## Porcelain Media:

Porcelain media are used for the surface cleaning and polishing of various metals and plastics.





## Plastic Media:

Plastic grinding media are used for the surface finishing of softer non ferrous materials such as brass, aluminum, xamac, stainless steel and copper.



## **Drying and Polishing Granules:**

Maize granules are used for drying processes. Walnut granules are used for the dry polishing processes. With the appropriate paste compound, high gloss finish is possible.



## Stainless Steel Media:

Stainless steel media with the appropriate compound are used for the burnishing process for most metals.



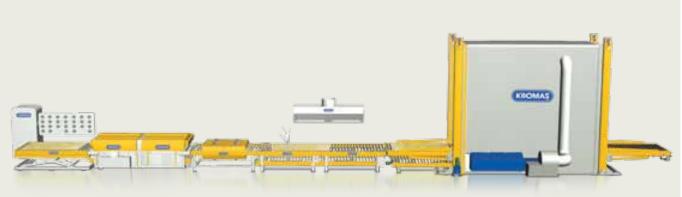
## Compounds:

Liquid compounds are used together with ceramic, porcelain, plastic and stainless steel media for the surface finishing processes.









Full Automatic Surface Treatment System with Double Storey Curing Oven



Surface Treatment System Equipped with IR and UV Technology

## **KROM-X<sup>®</sup> Process**

The rising star of surface finishing



Kromas, is engaged in the sector of surface finishing and develops process studies with an advanced R&D team.

"Surface finishing" is one of the most important process in the industrial manufacturing.

The new Krom-X<sup>®</sup> processes, developed by Kromas, is taking the surface quality to the highest level.

Krom-X<sup>®</sup> processes can be used for steel, stainless steel, copper, brass, xamac, gold, silver, plastic, semi precious stones and many other materials.

Please contact us for consultation, sample analysis and customized processing development.



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