

## CYLINDRICAL GRINDING

Grinding of tubes, pipes  
and other cylindrical parts

# VSM – Your specialist for cylindrical grinding

## Benefit from VSM's high-performing abrasives:

- > High stock removal per time unit
- > Extended service life and low set-up costs as a result
- > Consistent and reproducible surface finishes
- > Defined scratch patterns, roughness and gloss value
- > **VSM TOP SIZE** products achieve:
  - > Enhanced machining capacity
  - > A reduced temperature in the grinding area and because of this structural changes are avoided

## With VSM you can rely on receiving:

- > High-performance products made in Germany
- > On-site application-based advice
- > Reliable delivery performance
- > Analyses of problems and preliminary tests in the VSM Technical Center
- > Expertise based on co-operating with more than 60 machine manufacturers worldwide
- > A global distribution network with subsidiaries and partners in more than 70 countries

## Your application

Tubes



Piston rods



Cylinders



Furniture



Architecture



Containers



# VSM grain technologies in the spotlight

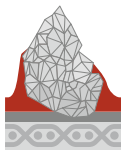
## Top grain technologies for high stock removal rates

### VSM ACTIROX



- > **Geometrically formed ceramic grain**
- > Maximum stock removal and a faster cut for superalloys and stainless steels
- > Cool grinding extends the service life thanks to VSM TOP SIZE

### VSM CERAMICS Plus · (CER Plus)



- > **Optimised self-sharpening effect** when processing high-alloyed steels ensures very high stock removal rates
- > Reduced temperature in the contact area
- > Significantly extended service life

### VSM CERAMICS · (CER)



- > Top product with **self-sharpening effect** for processing non-alloyed steels and stainless steels
- > High removal rate
- > Cool grinding allows longer contact times

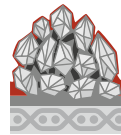
## Top grain technologies for perfect surface finishes

### VSM ILUMERON



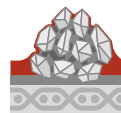
- > **Full faced coated long-term abrasive** with special bonding
- > For fine and consistent surfaces with high gloss levels
- > Developed primarily for processing stainless steels, superalloys and non-alloyed steels

### VSM COMPACTGRAIN Plus · (COM Plus)



- > **Long-term abrasive** that wears uniformly down to the backing material and achieves a consistent surface finish
- > Optimised reserve grain capacity
- > Improved bonding properties
- > Continuous self-sharpening thanks to the granulate structure

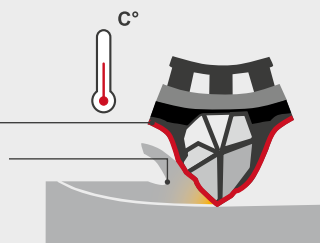
### VSM COMPACTGRAIN · (COM)



- > **Long-term abrasive** achieves reproducible surface finishes and consistent roughness
- > Uniform stock removal
- > Continuous self-sharpening thanks to the granulate structure

## VSM grinding-active additional layers

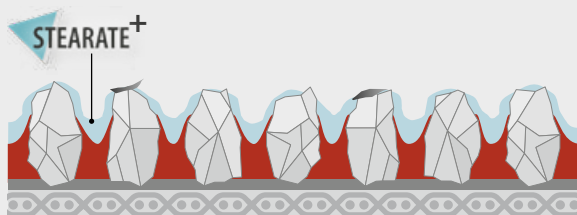
VSM TOP SIZE  
Less heat generated in the grinding zone ("cool grinding")



**VSM TOP SIZE** is recommended for dry machining heat-resistant stainless steels and non-ferrous metals. The grinding-active additional layer improves the cutting performance whilst reducing the temperature in the contact zone. This significantly extends the service life of the abrasive.

**VSM STEARATE Plus** and **VSM STEARATE** significantly reduce chip adhesion when processing non-ferrous metals and thus also reduce clogging of the abrasive. The service life is assured and extended so dramatically that excellent stock removal is achieved even after longer periods of use.

NEW



VSM STEARATE Plus

# Grinding of tubes and bars



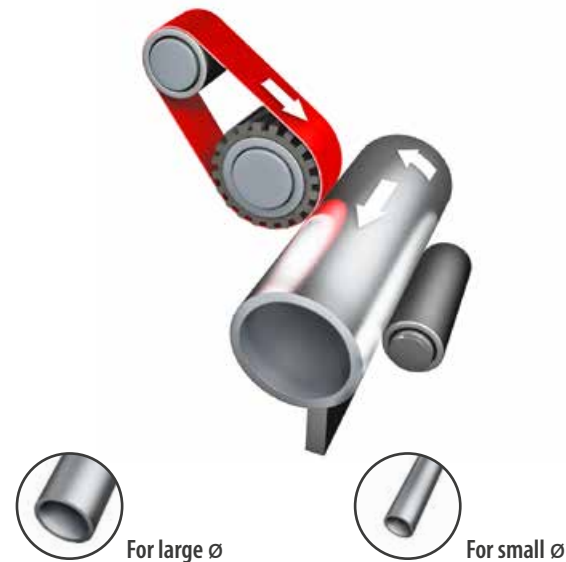
Grinding of longitudinally welded tubes



Centerless grinding of tubes and bars



Cylindrical grinding of tubes and bars using hand-held machines



For large ø

For small ø



## Recommended products

VSM series	Grain type	Grit size
XK885Y	CER Plus	20-120
XK850X	CER	36-80, 120
KK815Y	ZA	36-100
ZK713X	ZA/AO	24-320
XK789X	COM (CER)	60, 80
KK718X	COM (AO)	60-600
CK748X	COM (SIC)	80-400
CK772T	COM (SIC)	80-1200

## Recommended products

VSM series	Grain type	Grit size
XK880Y	CER Plus	20-120
XK760X	CER	24-120
ZK713X	ZA/AO	24-320
XK786X	COM (CER)	60, 80, 120
KK718X	COM (AO)	60-600
KK712X	COM (AO)	80-600
CK748X	COM (SIC)	80-400
CK772T	COM (SIC)	80-1200
RK700X	AO	180-1200
CK917C	CORK (SIC)	800, 1200
KV707X	Non-woven (AO)	coarse-fine
KV707X	Non-woven (SIC)	very fine, ultra fine

## Recommended products

VSM series	Grain type	Grit size
XK880Y	CER Plus	20-120
XK760X	CER	24-120
ZK744X	ZA	36-80
XK789X	COM (CER)	60, 80
KK712X	COM (SIC)	80-600
CK748X	COM (SIC)	80-400
CK918X	COM (SIC)	240-1200
CK917C	CORK (SIC)	800, 1200
KV707X	Non-woven (AO)	coarse-fine
KV707X	Non-woven (SIC)	very fine, ultra fine

## Recommended products

VSM series	Grain type	Grit size
XK885T	CER Plus	36, 40, 60, 80, 120
XK870X	CER	24-120
XK850X	CER	36-80, 120
XK870F	CER/AO	60-400
ZK713X	ZA	24-320
KK772J	COM (AO)	80-1200
CK772T	COM (SIC)	80-1200
KK711T	AO	50-500
CK721X	SIC	24-600
KV707X	Non-woven (AO)	coarse-fine
KV707X	Non-woven (SIC)	very fine, ultra fine

# Wire grinding



Wire descaling



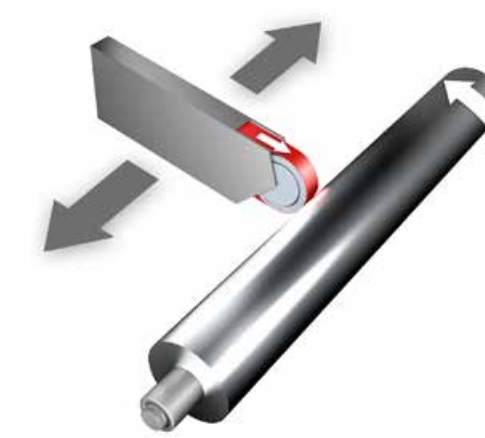
## Recommended products

VSM series	Grain type	Grit size
XK885Y	CER Plus	20-120
XK870X	CER	24-120
XK760X	CER	24-120
KK815Y	ZA	36-100
KK715X	ZA	24-80
ZK713X	ZA/AO	24-320
KK718X	COM (AO)	60-600
KK834X	COM (AO)	80-240
CK748X	COM (SIC)	80-400

# Grinding of cylindrically-shaped workpieces



Cylindrical grinding of piston rods and cylinders and grinding between centres



Cylindrical grinding of rollers during roller pass



## Recommended products

VSM series	Grain type	Grit size
DA930X	DA	46, 64, 91, 126, 251, 357 (µm)
XK885Y	CER Plus	20-120
XK760X	CER	24-120
ZK713X	ZA	24-320
XK786X	COM (CER)	60, 80, 120
KK718X	COM (AO)	60-600
KK712X	COM (AO)	80-600
CK748X	COM (SIC)	80-400
CK772T	COM (SIC)	80-1200
RK700X	AO	180-1200
KV707X	Non-woven (AO)	coarse-fine
KV707X	Non-woven (SIC)	very fine, ultra fine

## Recommended products

VSM series	Grain type	Grit size
DA930X	DA	46, 64, 91, 126, 251, 357 (µm)
XK885Y	CER Plus	20-120
XK850X	CER	36-80, 120
XK760X	CER	24-120
ZK744X	ZA	36-80
XK789X	COM-CER	60, 80
CK748X	COM-SIC	80-400
CK918X	COM-SIC	240-1200
RK700X	AO	180-1200
KV707X	Non-woven (AO)	coarse-fine
KV707X	Non-woven (SIC)	very fine, ultra fine

### Legend

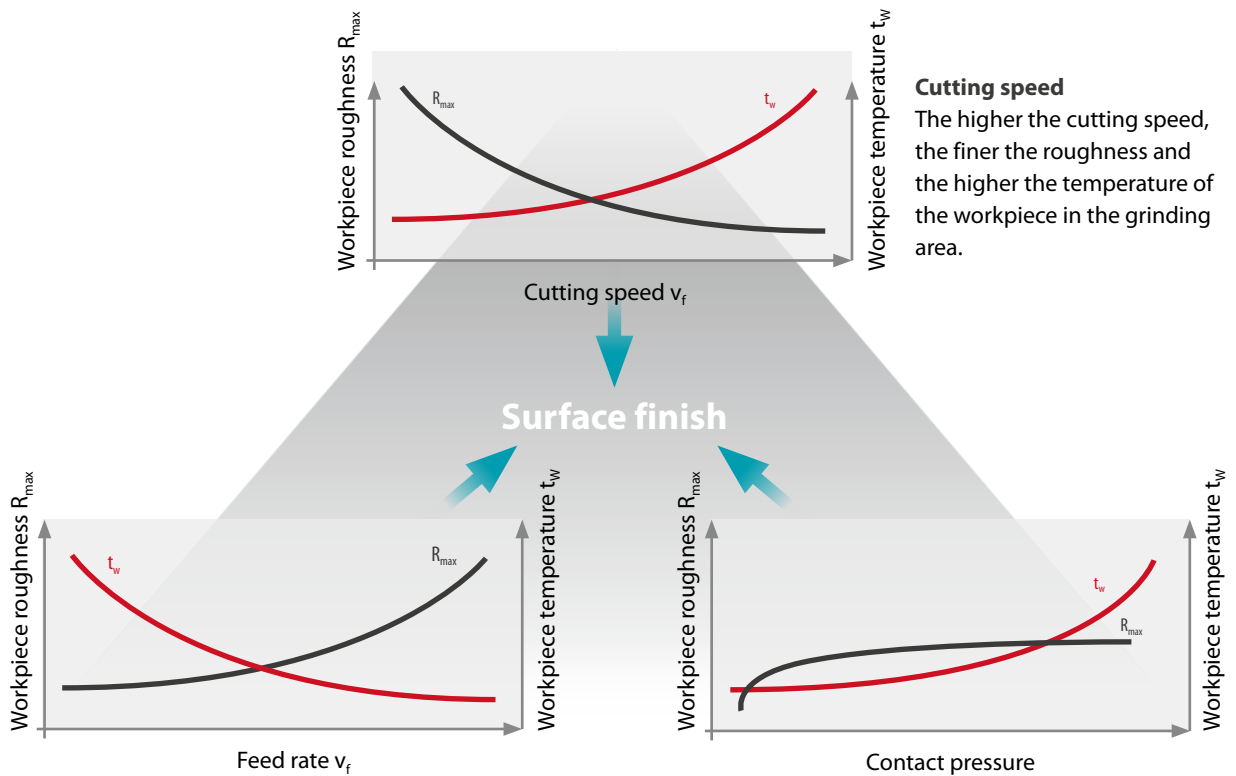
DA	VSM DIAMOND	COM (CER)	VSM COMPACTGRAIN CERAMICS	SIC	VSM SILICON CARBIDE
CER Plus	VSM CERAMICS Plus	COM (AO)	VSM COMPACTGRAIN ALUMINIUM OXIDE	Non-woven (AO)	VSM NON-WOVEN ALUMINIUM OXIDE
CER	VSM CERAMICS	COM (SIC)	VSM COMPACTGRAIN SILICON CARBIDE	Non-woven (SIC)	VSM NON-WOVEN SILICON CARBIDE
ZA	VSM ZIRCONIA ALUMINA	AO	VSM ALUMINIUM OXIDE	CORK (SIC)	VSM CORK SILICON CARBIDE

### Flexibility of the backing material (last letter of the series name):

E	extremely flexible	J	flexible	X	sturdy
F	very flexible	T	semi-sturdy	Y	very sturdy

Z extremely sturdy

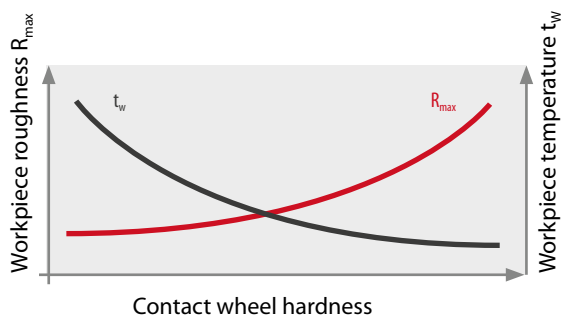
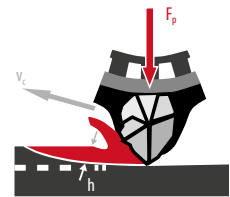
# Grinding parameters



**Feed rate**  
The higher the feed rate, the deeper the roughness, and the lower the temperature of the workpiece in the grinding area.

**Contact pressure**  
The higher the contact pressure, the higher the temperature of the workpiece because of the penetration of the abrasive grains into the workpiece. There is hardly any change in the roughness of the workpiece.

$F_p$  = Contact pressure  
 $v_c$  = Cutting speed  
 $h$  = Chip thickness



**Contact wheel hardness**  
The harder the contact wheel, the deeper the roughness and the lower the temperature of the workpiece in the grinding area.



**Surface Type** (coating)  
 metal, rubber, synthetic material  
**Hardness** °Shore A  
**Serration** shape, land to groove ratio  
**Metal body**

# A worldwide leader in abrasives.



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