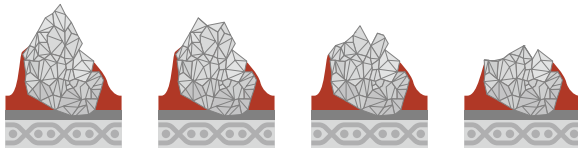


**CYLINDRICAL GRINDING**

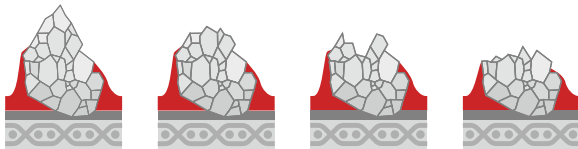
**Grinding of tubes, pipes  
and other cylindrical parts**

# The concept of self-sharpening

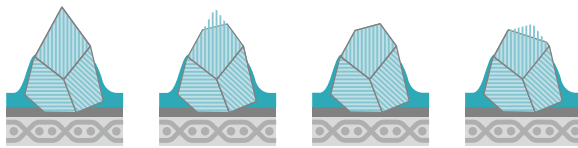
## NEW! VSM CERAMICS Plus (CER Plus)



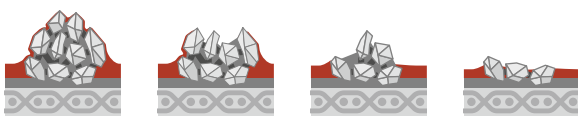
## VSM CERAMICS (CER)



## VSM ZIRCONIA ALUMINA (ZA)



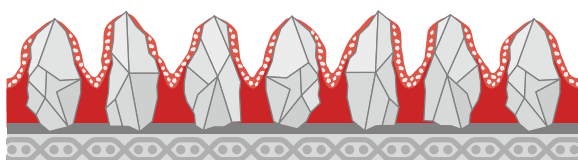
## VSM COMPACTGRAIN (COM)



t=0 Grinding time

*Fine aluminium oxide particles ( $Al_2O_3$ ) in the form of crystals are compacted by sintering. The forces inherent in the abrasion process break down the structure of the crystals. The breaking down of the grain continuously produces new and sharp edges.*

## Additional layer for cooler grinding (TOP SIZE)



## For high stock removal

Products based on VSM CERAMICS Plus, VSM CERAMICS and zirconia alumina are ideal solutions where a more aggressive cut is needed. These products ensure an extremely high stock removal rate and a very long service life thanks to their continuous self-sharpening process. VSM CERAMICS products impress with their cool grinding characteristics, which in turn makes for extended cutting performance and prevents surface discoloration. VSM CERAMICS exhibit a high level of hardness, and this makes them ideal for machining extremely hard surfaces.

## For fine surface finishing

VSM COMPACTGRAIN abrasives consist of granules. Each individual grain is a compact unit which consists of numerous abrasive grains. It is in machine grinding that compact grain products really come into their own and are most impressive in terms of a long service life and short set-up times. Their stock removal rate is uniform with a consistent roughness across the entire life of the tools.

VSM non-wovens perfectly follow the shape of a workpiece. This produces premium surface qualities which can easily be reproduced.

## Top-level quality

For applications involving the dry machining of stainless and high-temperature steels we recommend using **TOP SIZE** products. An additional maker coat with a grinding-active layer increases the cutting performance significantly. The workpiece temperature in the contact area is reduced considerably without causing any structural changes in the material of the workpiece.

# VSM – Your point of contact for cylindrical grinding

**We provide industrial-grade abrasives for the most stringent demands and for increased efficiency:**

- > Innovative, high-performance products
- > Application-based advice and product development
- > Dependable deliveries and a reliable customer service
- > Always the most suitable grinding solution for your application

## **Your advantages:**

- > High degree of consistency in manufacturing
- > Continuous increase in productivity thanks to our narrow belt abrasives technology based on our product lines VSM CERAMICS and VSM COMPACTGRAIN
- > Consistent surface finishes in line with customer requirements
- > Time-saving preliminary tests carried out in our own in-house Technical Center

## **Your application**



*Tubes*



*Rams*



*Cylinders*



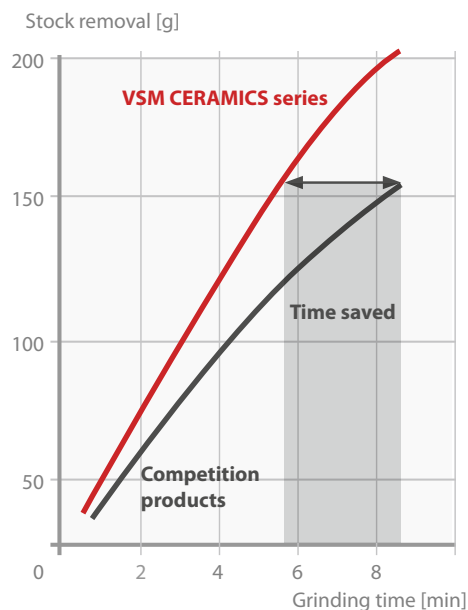
*Furniture*



*Architecture*



*Containers*



*Grinding performance of different abrasives*



# Grinding of tubes and bars



Grinding of longitudinally-welded tubes



Centerless grinding of tubes and bars



Recommended products		
VSM series	Grain type	Grit size
XK885Y	CER	20-120
XK850X	CER	36-120
KK815Y	ZA	36-100
ZK713X	ZA	24-320
XK789X	COM-CER	40, 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	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
CK917X	COM-SIC	240-1200
KV707X	Non-woven	coarse - very fine



Recommended products		
VSM series	Grain type	Grit size
XK885Y	CER	20-120
XK760X	CER	24-120
ZK744X	ZA	36-80
XK789X	COM-CER	40, 60, 80
KK779X	COM-AO	180-600
KK712X	COM-SIC	80-600
CK748X	COM-SIC	80-400
CK918X	COM-SIC	240-1200
CK917X	COM-SIC	320-1200
KV707X	Non-woven	coarse - very fine

## Legend

<b>DA</b>	VSM DIAMOND	<b>COM-CER</b>	COMPACTGRAIN-CERAMICS	<b>AO</b>	ALUMINIUM OXIDE
<b>CER</b>	VSM CERAMICS	<b>COM-AO</b>	COMPACTGRAIN-ALUMINIUM OXIDE	<b>SIC</b>	SILICON CARBIDE
<b>ZA</b>	VSM ZIRCONIA ALUMINA	<b>COM-SIC</b>	COMPACTGRAIN-SILICON CARBIDE		

# Wire grinding



**Cylindrical grinding of tubes and bars using power tools**



**Descaling of coils using planetary grinding**



Recommended products		
VSM series	Grain type	Grit size
XK870X	CER	24-120
XK885T	CER	36-120
XK850X	CER	36-120
XK870F	COM-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	coarse-very fine

Stock removal ↑  
Surface finish ↓

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

Stock removal ↑  
Surface finish ↓

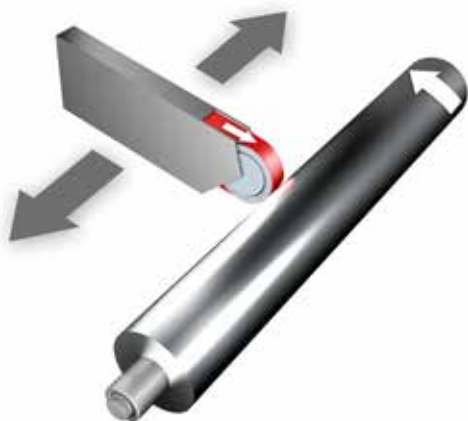
# Grinding of cylindrically-shaped workpieces



**Grinding of pistons and cylinders between centers**



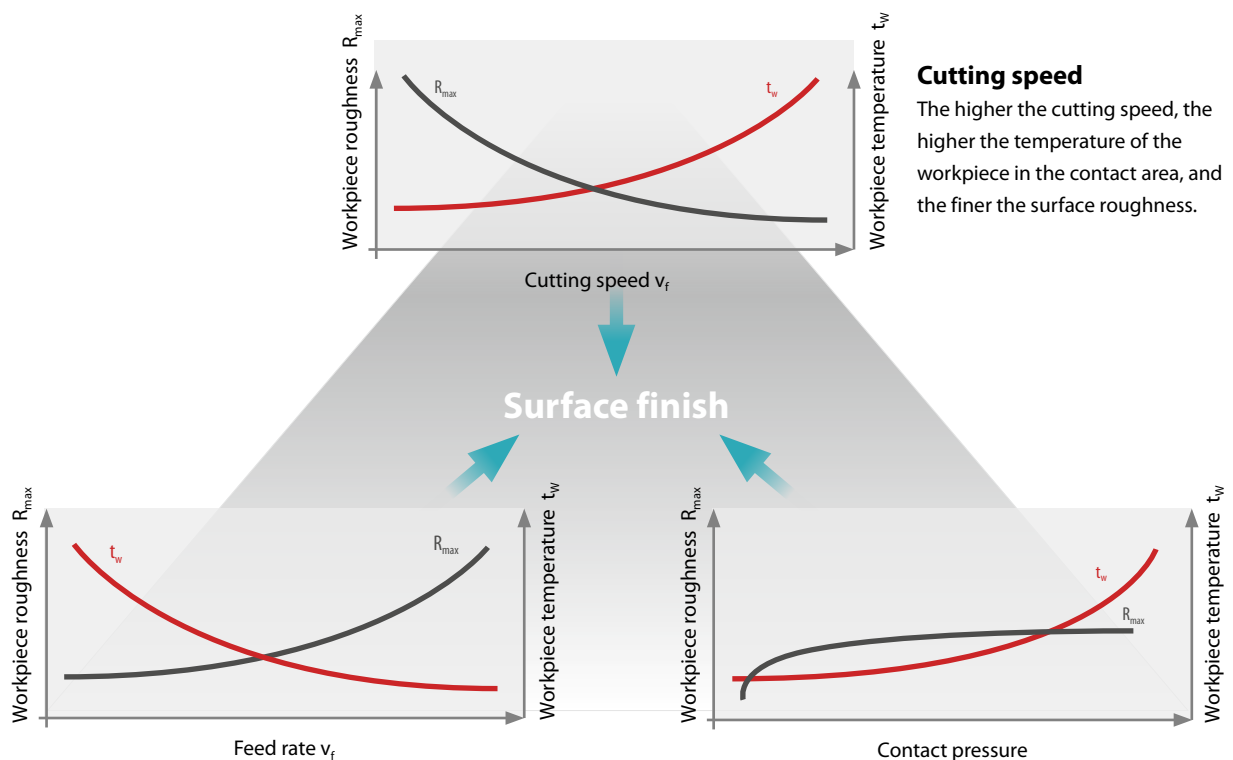
**Cylindrical grinding of rollers on supporting rollers**



Recommended products			
VSM series	Grain type	Grit size	
DA930X	DA	46, 64, 91, 126, 251 (µm)	
XK885Y	CER	20-120	
XK850X	CER	36-120	
XK760X	CER	24-120	
ZK744X	ZA	36-80	
XK789X	COM-CER	40, 60, 80	
KK779X	COM-AO	180-600	
CK748X	COM-SIC	80-400	
CK918X	COM-SIC	240-1200	
KK711Y	AO	36-500	
KV707X	Non-woven	coarse-very fine	

Recommended products			
VSM series	Grain type	Grit size	
DA930X	DA	46, 64, 91, 126, 251 (µm)	
XK885Y	CER	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	
KK711Y	AO	36-500	
KV707X	Non-woven	coarse-very fine	

# Grinding parameters



## Cutting speed

The higher the cutting speed, the higher the temperature of the workpiece in the contact area, and the finer the surface roughness.

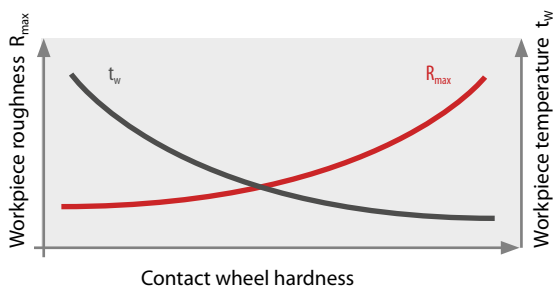
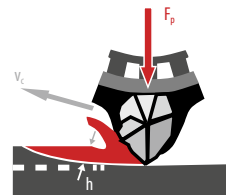
## Feed rate

The higher the cutting speed, the higher the temperature of the workpiece in the contact area, and the finer the surface roughness.

## Contact pressure

The higher the cutting speed, the deeper the abrasive grains penetrate the material, the higher the temperature of the workpiece in the contact area. The roughness remains largely unchanged.

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

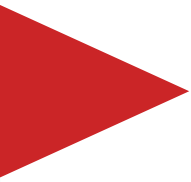


## Contact wheel hardness

The harder the contact wheel, the deeper the roughness, the lower the temperature of the workpiece in the contact area.



- Surface Type** (coat) Metal, rubber, synthetic material
- Hardness** °Shore A
- Serration** shape, land to valley ratio
- Metal body**



**VSM • Vereinigte Schmirgel-  
und Maschinen-Fabriken AG**

Siegmundstraße 17

D-30165 Hannover

T +49 511 3526 0

F +49 511 3526 333

info@vsmag.de

www.vsmabrasives.com

**For points of contact in other coun-  
tries, please refer to our website at  
[www.vsmabrasives.com](http://www.vsmabrasives.com)**