

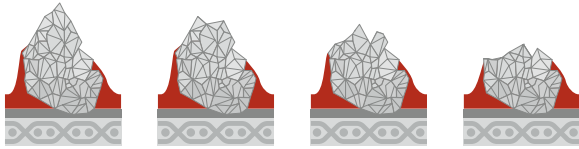
BEVELLING

**Preparation of a
welding seam by grinding**

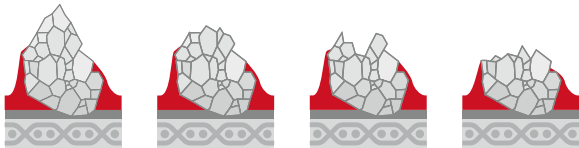
The VSM self-sharpening concept

NEW

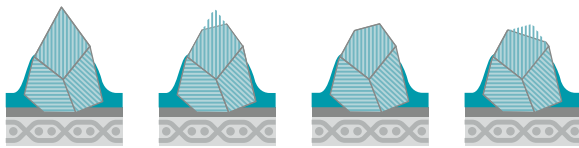
VSM CERAMICS Plus (CER Plus)



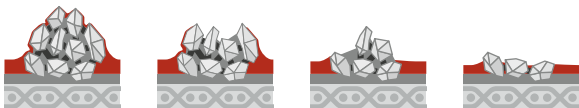
VSM CERAMICS (CER)



VSM ZIRCONIA ALUMINA (ZA)

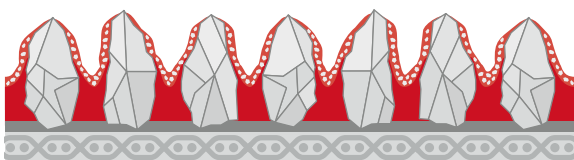


VSM COMPACTGRAIN (COM)

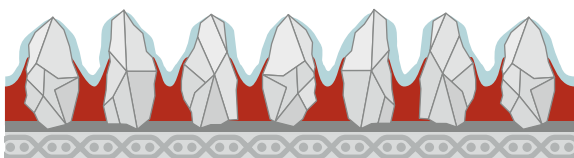


$t=0$
→
 Grinding time

VSM additional grinding-active layers



VSM TOP SIZE



VSM STEARATE

For high stock removal

VSM abrasives with ceramic and zirconia alumina grains are the products we recommend when high stock removal rates are required. Continuous self-sharpening of the grain guarantees long-lasting high performance.

VSM CERAMICS are distinguished by their cool cutting characteristics. This enhances the service life of the abrasive. The risk of surface discoloration is considerably reduced.

The new **VSM CERAMICS Plus** makes machining of extremely hard surfaces easier. The fracture behaviour of the abrasive has been considerably improved, which enhances the service life even more.

For perfect surface finishes

VSM COMPACTGRAIN describes an abrasive granulate which is composed of numerous individual abrasive grains. A uniform stock removal rate and a consistent roughness across the entire life of the product and an extremely long service life are the most impressive characteristics of the **VSM COMPACTGRAIN** series.

For applications involving the dry machining of stainless and high-temperature steels we recommend using **VSM TOP SIZE** products. Additional layers with grinding additives can further improve the cutting performance of VSM abrasives whilst reducing the workpiece temperature in the contact area considerably.

The use of **VSM STEARATE** leads to an increase in productivity when machining wrought alloys (NF metals). This effect is achieved by effectively preventing clogging of the abrasive.

VSM – Your specialist for the preparation of welding seams

Benefit from VSM's high-performing abrasives:

- > High stock removal per time unit
- > Extended service life and low set-up costs as a result
- > Smooth and clean surfaces with no traces of slag or other impurities
- > Optimum extraction due to very fine shavings
- > **VSM TOP SIZE** products achieve:
 - > Enhanced machining capacity
 - > A reduced temperature in the grinding area and because of this structural changes are avoided
- > The additional **VSM STEARATE** layer actively supports the grinding process and prevents chip adhesion

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

Cranes



Construction machinery



Excavator buckets



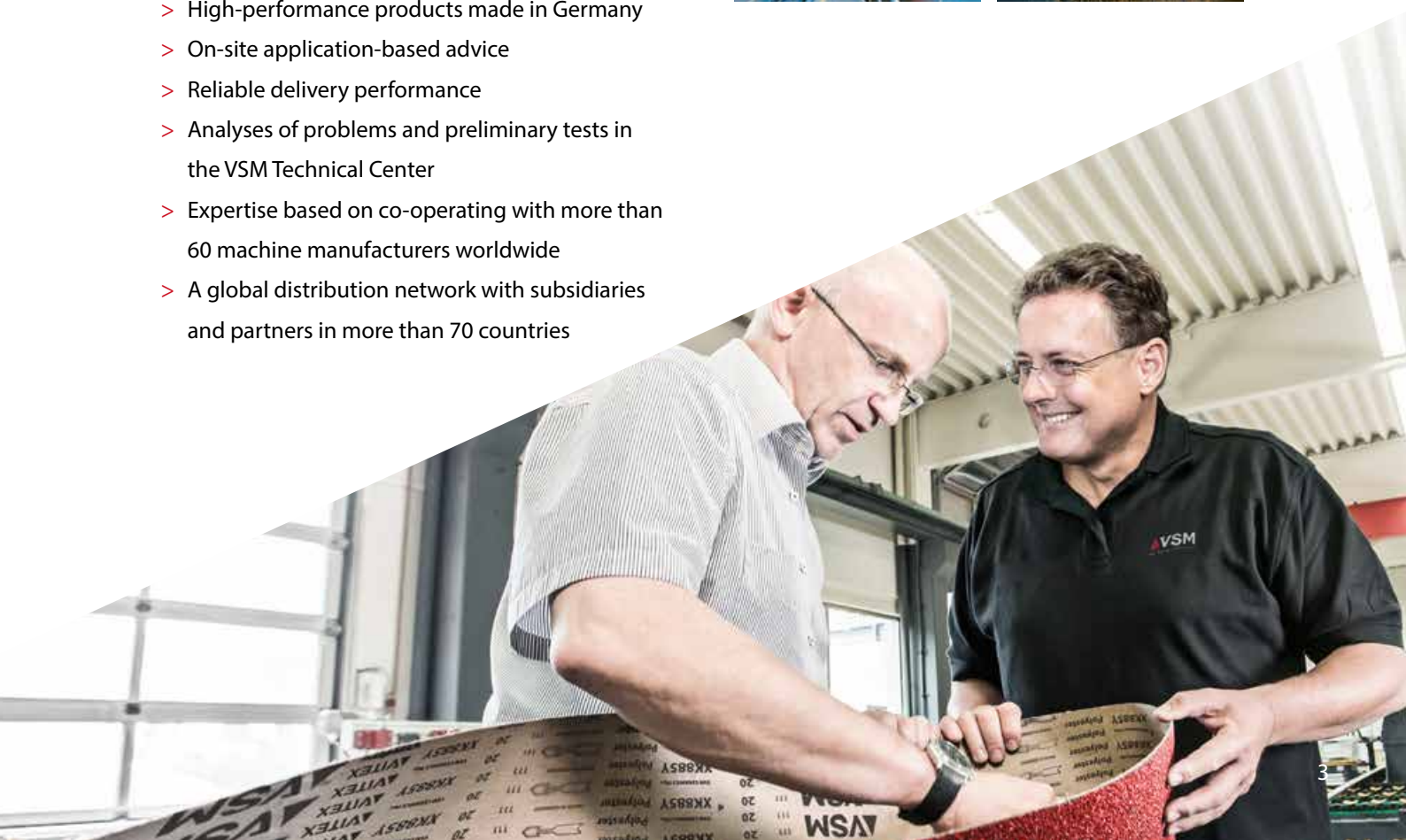
Machine frames and racks



Shipbuilding



Steel bridges



Case studies

Grinding of mild steel plates

VSM CERAMICS **XK888Z**

Workpiece	Panels 15 mm thick
Material	Structural steel
Grinding machine	Bevelling machine
Contact wheel	> 400 mm diam. > hardness: 95° Shore A > serration: 1:1
Cutting speed	30 m/s
Feed rate	1.5 m/min
Belt dimensions	120 × 2,500 mm
Grit size	24, 36
Lubricants	None
Grinding task	Bevelling

Characteristics:

- > Extremely strong cutting capacity thanks to the sturdy backing and the consistent production of fresh cutting edges
- > Extremely sturdy belt joints on abrasive tools
- > VSM ceramic grain and **VSM TOP SIZE** ensure cool grinding



Grinding of structural components

VSM CERAMICS Plus XK885Y

Workpiece	Structural components
Material	Steel
Grinding machine	Bevelling machine
Contact wheel	> 400 mm diam. > hardness: 90° Shore A > serration: 2:1
Cutting speed	30 m/s
Feed rate	14 m/min
Belt dimensions	100 × 3,200 mm
Grit size	20, 24
Lubricants	None
Grinding task	Bevelling

Characteristics:

- > High-performing bevelling even for hard, high-alloyed steels
- > Optimum belt joints
- > VSM ceramic grain and **VSM TOP SIZE** ensure cool grinding



Bevelling with abrasives

Coated abrasives provide many advantages for the bevelling of welding seams as compared to other methods such as plasma and laser cutting, shearing, turning and milling.

Method	Advantages	Disadvantages
Grinding	<ul style="list-style-type: none">> Suitable for all types of steel and bevel angle> Suitable for widths with high quality bevels> Utmost quality, speed and precision	
Oxy-fuel cutting	<ul style="list-style-type: none">> Low investment and wear part costs> Covering a wide range of material thicknesses from medium to large	<ul style="list-style-type: none">> Only suitable for structural steel> Poor cuts for thicknesses under 5 mm> Material distortion, straightening work required> High heat transfer, large impacted area> Low dimensional stability
Plasma cutting	<ul style="list-style-type: none">> Cutting of alloyed steels and aluminium from thin to medium thicknesses> High cutting speeds	<ul style="list-style-type: none">> Heat-related distortion of workpieces> Limited range up to 30 mm> Wide kerf
Laser cutting	<ul style="list-style-type: none">> High degree of part accuracy for thin and medium sheet metal thicknesses> Small kerf width (0.2 – 0.4 mm)	<ul style="list-style-type: none">> High investment and operational costs> Limited range of sheet metal thicknesses
Water jet	<ul style="list-style-type: none">> No metallurgical changes on cut surfaces	<ul style="list-style-type: none">> High investment and operational costs
Shearing	<ul style="list-style-type: none">> No heat transfer	<ul style="list-style-type: none">> Limited range up to 10 mm
Milling / Turning	<ul style="list-style-type: none">> Clean, oxid-free cut surfaces without burrs	<ul style="list-style-type: none">> High wear and tear for stainless steel> Limited range of sheet metal thicknesses

VSM abrasives for beveling in preparation of welding seams



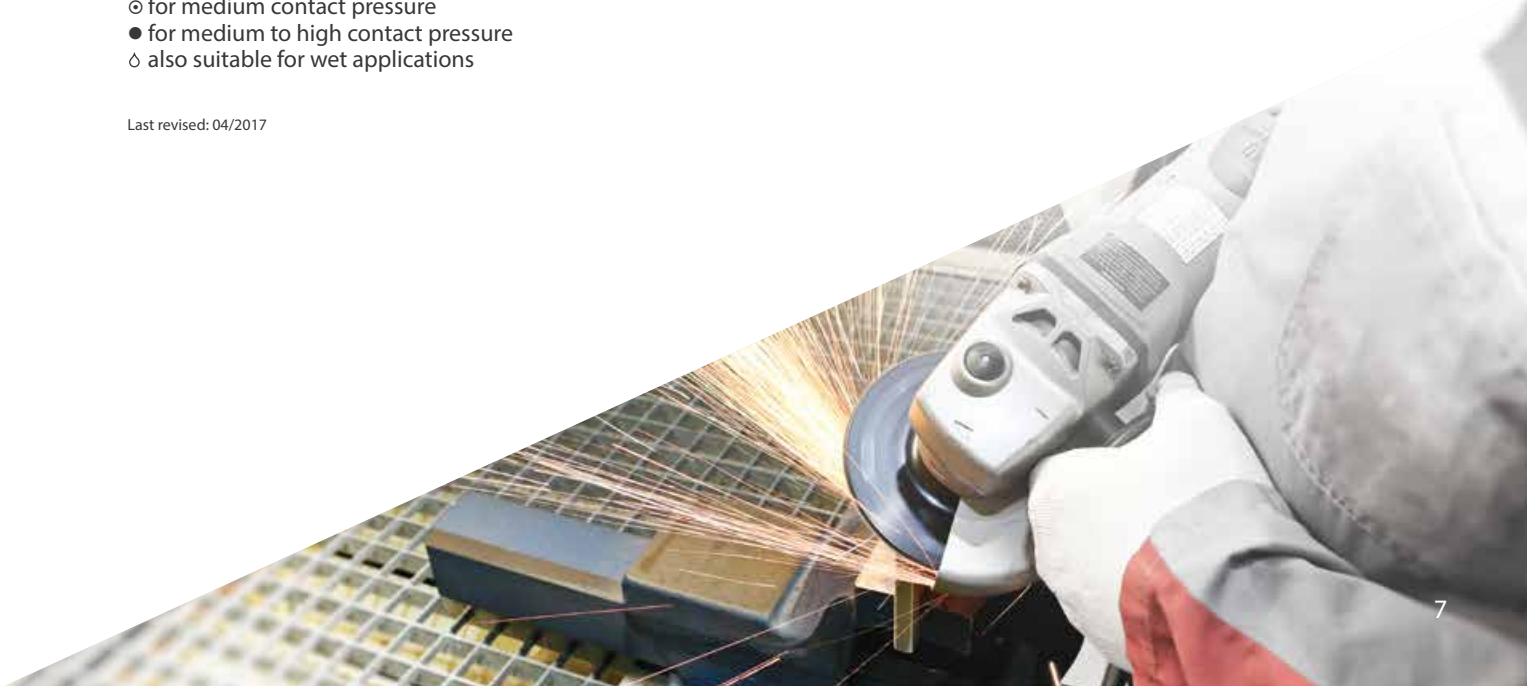
Back-stand	Beveling machine	Angle grinding	Backing	Grain type	Feature	Stock removal → Surface										VSM series
						20	24	36	40	50	60	80	100	120		
●	●		Cloth	VSM CERAMICS Plus	▼ TOP SIZE, ◊	■	■	■	■	■	■	■	■	■	■	XK885Y
●	●		Cloth	VSM CERAMICS Plus	▼ TOP SIZE, ◊	■	■	■	■	■	■	■	■	■	■	XK880Y
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊		■	■								XK888Z
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊	■	■	■	■	■						XK877Z
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊		■	■	■	■	■	■	■	■	■	XK870X
●	●		Cloth	VSM CERAMICS	▼ TOP SIZE, ◊			■	■	■	■	■			■	XK850X
●	●		Cloth	VSM CERAMICS	◊		■	■	■	■	■	■	■	■	■	XK760X
●	●		Cloth	VSM ZIRCONIA ALUMINA	▼ TOP SIZE, ◊			■	■	■	■	■	■	■		KK815Y
●	●		Cloth	VSM ZIRCONIA ALUMINA	▼ TOP SIZE, ◊			■	■	■	■	■				ZK744X
●	●		Cloth	VSM ZIRCONIA ALUMINA	◊		■	■	■	■	■	■				KK715X
●	●		Cloth	VSM ZIRCONIA ALUMINA	◊		■									KK717
●	●		Cloth	VSM ZIRCONIA ALUMINA	◊		■	■	■	■	■					KK716
		●	Fibre	VSM CERAMICS Plus	▼ TOP SIZE	■	■	■	■	■	■	■	■	■	■	XF885
		●	Fibre	VSM CERAMICS	▼ TOP SIZE		■	■	■	■	■	■	■	■	■	XF870
		●	Fibre	VSM CERAMICS	▼ TOP SIZE			■	■	■	■	■				XF850
		●	Fibre	VSM CERAMICS			■	■	■	■	■	■			■	XF760
		●	Fibre	VSM ZIRCONIA ALUMINA			■	■	■	■	■	■	■	■	■	ZF713

Legend:

- for low to medium contact pressure
- ◉ for medium contact pressure
- for medium to high contact pressure
- ◊ also suitable for wet applications

▼ **TOP SIZE** additional grinding-active layer

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A worldwide leader in abrasives.



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