NORTON

VORTEX™ technology

Disc Grinding

REVOLUTIONARY technology for Disc

VORTEX™ Technology in Resinoid Disc Wheels is an exciting new concept from Norton that provides high metal removal and ultimate part quality.

High Metal Removal

Combining a new engineered abrasive grain and an innovative manufacturing process, VORTEX technology carefully controls the structure to create a highly porous and permeable grinding tool with unsurpassed abrasive grain spacing. This brings all the advantages of much higher metal removal rates, improved form holding and longer wheel life alongside a greatly improved part quality.

Lower Power Draw

Vortex Technology produces a free cutting wheel that works harder with less power draw.

Versatility

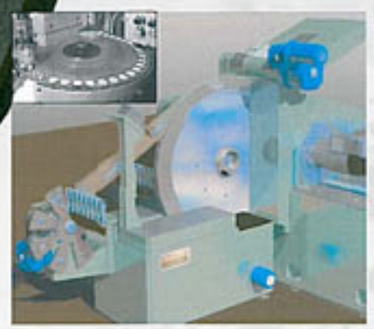
Vortex resinoid product with one single abrasive blend can replace both alumina oxide and silicon carbide abrasive families.

Long Wheel Life

Optimizing the abrasive porosity distribution is critical for improving material removal, for decreasing dressing frequency and wheel wear resulting in extended wheel life.

Reduced Cycle Times and lower total grinding Costs

Cycle time reduction , together with up to 2 times the number of pieces ground per wheel over conventional resin disc wheel, results in higher productivity and lower cost per part ground.



MARKETS

- Bearing
- Automotive
- General Engineering
- Cutlery and Blades
- Tools

FEATURES

- High performance engineered abrasive grain
- Highly porous & permeable for maximizing coolant diffusion in the grinding zone
- Optimum grain spacing for improved chip clearance

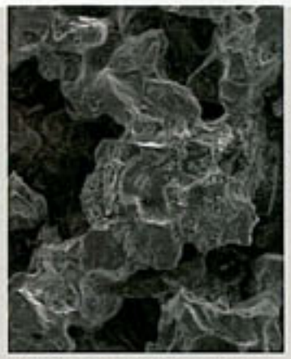
BENEFITS

- Very high metal removal rates giving dramatically reduced cycle times
- Faster grinding
- Up to double wheel life increase through dressing
- Gentle on the dressing tool, very easy to profile and to re-open
- Ultimate degree of burn reduction through extreme permeability
- Consistent grinding performance from first grind to stub eliminates changing of grinding parameters

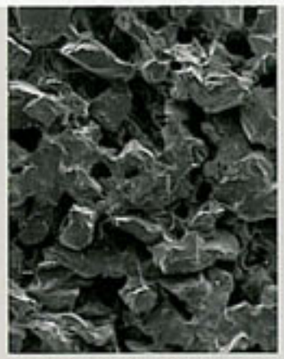
HIGH
metal removal

REDUCED
grinding costs

ULTIMATE
part quality



Structure of a disc wheel made with VORTEX patented technology



Structure of a disc wheel made with conventional technology

Using VORTEX technology, you can:

- Achieve higher MRR (metal removal rate) at a constant power
- Grind at lower power at a constant MRR
- Achieve longer wheel life at a constant MRR

Disc Vortex Availability

(For further info contact your "Saint Gobain Abrasive" application engineer)

Specifications	
Abrasive :	A
Grit :	60 to 120
Hardness :	C - L
Bond :	B
Technology :	Vortex

Application Field :

Medium & high carbon steel , inconel , tool steel , bearing steel

Dimensions	
Diameter :	Up to 1050
Thickness :	Various
Nut layout :	Reccomendable if nuts are present
Slots and perforations :	available if requested
Wheel types (FEPA) :	35 , 36 , 37

Maximum Operating Speed

C :	32 m/sec
D - F :	35 m/sec
G - L :	40 m/sec

Grit Size Selection

Vortex wheels are able to cut at rates that are possible with a coarser grit on conventional products . Reported conversion table for a preliminary choice:

Standard product Grit size (FEPA)	Recommended Vortex grit size
60 - 46	60
60 - 80	80
80 - 100	100
100 - 120 & Finer	120

Availability of truing and dressing tools

A broad range of stationary dressers are available , for dressing Vortex Disc Grinding wheels . Multi-Point or Single Point dresser are the best choice . By using the benefit of Vortex technology a reduced dressing frequency is recommended. This will extend the wheel and dresser life for most economical use. For more detailed info contact your application engineer.

Single Point Diamond Dresser

Wheel Diameter from 350 to 600 mm : 1,0 carat
from 600 to 1000 mm : 1,5 carat
Please specify Shank Design (MT1 , Cyl . 11 etc.)

Multipoint Diamond Dresser

Diamond size : D2240 for Wheel Grit Size ≤ 46
D1001 " " 60 . . 80
D711 " " 80 . . 120
Tool Type : IG 2,5 for Wheel diameter = 350 up to 700 mm
IG 5 " " = 700 up to 1000 mm
Please specify Shank Design (MT1, Cyl.11 etc.)
Special tools with diamond on both ends are also possible

Example 1 : Automotive

Machine/Application Information :

Application : Double -Disc Grinding of engine valves
Grinder : Gardner Horizontal - spindle , rotary carrier

Part Information :

Material Type :	inconel
Hardness :	48 HRc
Approximate Part Sizes :	diam. 50 mm
Stock Removal :	0,203 mm
Surface Finish :	visual

Wheel Information :

Wheel Size :	762 x 76 x 356 mm
Standard specification :	resinoid wheel in alumina oxide grit 46
Vortex specification :	A60CBVortex

Results :

The Vortex wheel ground with 60% longer life than standard wheel while reducing scrap by 26% .

Example 2 : General Engineering

Machine/Application Information:

Application : Disc grinding of aircraft disc rotor
Grinder : Multi-head Mattison rotary table

Part Information :

Material Type :	Ni- Cr - Mo alloyed steel
Hardness :	39 - 44 HRc
Part Sizes :	76 x125 mm rectangular shape
Stock Removal mm :	0,8 mm per side (5 passes)
Surface Finish :	non critical

Wheel Information :

Wheel Size :	560 x 120 x 200 mm
Standard specification :	resinoid wheel with 30% Ceramic alumina oxide
Vortex specification :	A60GBVortex

Results :

The Vortex wheel was able to show three times the wheel life compared to the standard wheel while high metal removal rates

Example 3 : Bearing

Machine/Application Information :

Double Disc grinding of a inner ring for bearing
Grinder : Giustina

Part Information :

Material Type :	100 C6
Part Size :	18 – 35 mm
Hardness :	untreated
Surface finish :	0.2-0.4 µ (max 1 µ)
Stock Removal :	up to 0,25 mm per side

Wheel Information :

Wheel Size :	760 x 100 x 356 mm
Standard Specification :	alumina oxide
Norton test spec :	57A54 MB14
Vortex specification :	A60LBVortex

Results :

The Vortex wheel reduced 3 times the dress frequency (1/35000 vs 1/10000) with decrease of wheel wear. Vortex provides also an excellent control Ra. Form holding & keeping the wheel face straight.

Example 4 : Automotive

Machine/Application Information :

Double-Disc grinding of piston rings
Grinder : Besly horizontal-spindle, 40Hp

Part Information :

Material Type :	SAE 9245, graphite iron
Part Sizes :	diameter range of 90-102mm thickness range of 1.2-1.5mm
Stock Removal :	varies, typically 0.043mm
Surface Finish :	0,4 µ Ra

Wheel Information :

Wheel Size :	762x51x368 mm
Standard specification :	resinoid wheel alumina oxide silicon carbide 120 grit blend
Vortex specification :	A120EBVortex

Results:

The Vortex wheel was able to show over 2 times the wheel life compared to standard wheel while consistently holding tight size, run-out and finish tolerances.

Our patented VORTEX Technology does not require the use of artificial pore inducers (chemicals) unlike other porous wheel technologies.
By choosing VORTEX Technology for your grinding operation, YOU help to preserve the environment.

Saint-Gobain Abrasives manufactures and markets its engineering products across the world . The panel on the right represents a small selection of our operations. Please contact any of them for details of a location near you.

SAINT-GOBAIN ABRASIVES IS ACCREDITED TO ISO 14001

SAINT-GOBAIN ABRASIVES IS ACCREDITED TO ISO 9001:2000

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