

*5 Axis CNC Tool and
Cutter Grinding Machine*



ECOGRIND VX⁵

 **WIDMA[®]**
Machining Solutions Group

ECOGRIND VX⁵



Salient Features :

- Grinding spindle with peak power of 38 kW, Max rpm: 9000.
- Auto wheel changer (AWC)-5 wheel pack sets with simultaneous change of coolant manifold.
- Work head (A Axis) with Direct drive for cylindrical grinding
- Rotary indexing table (B axis) with Direct Drive for higher indexing accuracies.
- Auto Tool loading system (Robot).
- All Guide way elements and Ball screws are provided with three levels of protection against coolant mist to achieve Zero break down.
- Automatic Wheel Probing to capture wheel offsets (FLD).
- All Linear axes are with direct feed back Linear scales for higher positioning accuracies and repeatability.
- Coolant tank system with 5 microns filtration
- Programmable travelling steady rest with top clamp.

Tool Grinding Software

NUMROTO+ Software



End Mill with Flat face



Step Drill



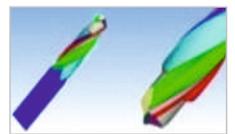
Reamer



Ball Nose End Mill



End Mill with Corner radius



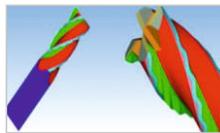
Sub land Drill



Facet Drill



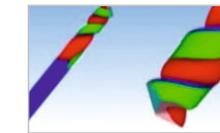
Spiral Point Drill



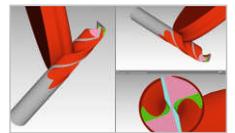
Wave Cutter



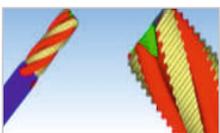
Fir Tree cutter



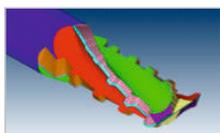
Differential Helix Drill



Wheel Profile Determination



Roughing End mill



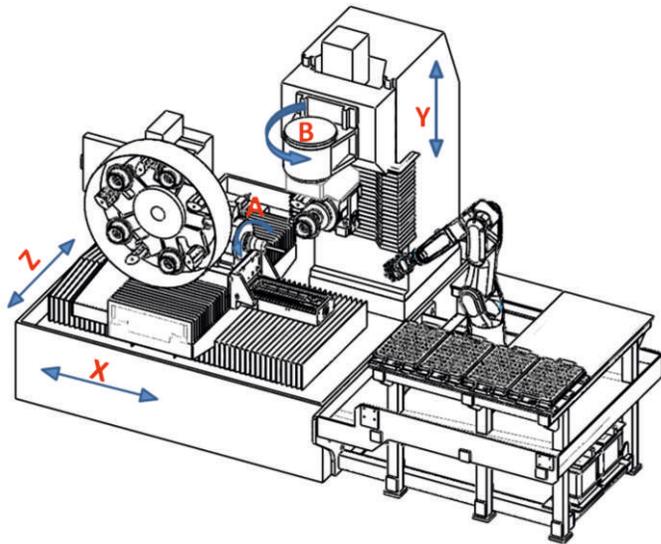
Helical Profile tool



3d Machine Collision

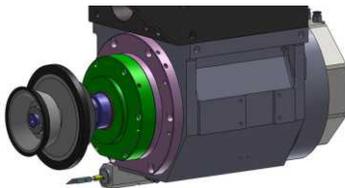


Form Cutter



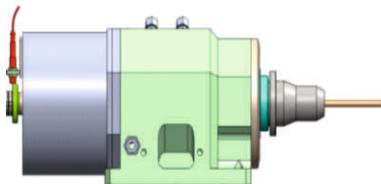
Machine Axis Configuration & Sub-Assemblies

Spindle Assembly



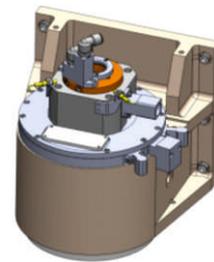
- VX5 is provided with single spindle, 16 (cont.S1) /38(Peak) kW power, max 9000 rpm & HSK E50 type.
- Wheel clamping is automatic.

Work Spindle Assembly(A-axis)



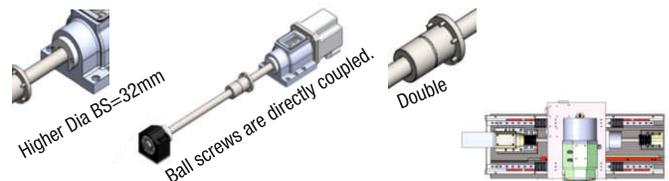
- Direct drive torque motor to achieve higher speeds (1200 rpm) for cylindrical grinding.
- Direct encoder ensures higher indexing accuracies and repeatability,.

Rotary Index Table Assembly(B-axis)



- Direct drive Torque motor to achieve faster speed -50 rpm.
- Direct encoder ensures higher indexing accuracies and repeatability.

Feed Drive Assembly



- All Linear axes X,Y & Z Ball screws are directly coupled to AC servomotors.
- All the Linear axes are provided with Linear scales.
- Three layer protection against coolant entry-Individual bellows for Lmg's, ball screws over all top bellow with sheet metal top cover over.

Machine Accessories

Robot Automation Features :

Auto Work Piece/Tool Loader



- Robot loader
- Tools capacity:
 - Dia 3-12 : 462 Nos
 - Dia 12.1-20 : 270 Nos
 - Dia 20.1- 32 : 126 Nos
- Double gripper for faster cycle
- Partition b/w grinding zone and loader

Auto Tool Cleaning by Robot



- Oil with carbide residue present in the tool after grinding operation will be removed by pressurized air before loading on to the Pallet.
- This activity is carried out completely by Robot.

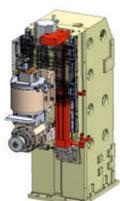
Auto Laser Marking by Robot



- Tool drawing number, Tool size, logo, company name etc. can be marked using laser machine.
- Facility to mark Tool serial number, 1D & 2D barcode.
- The complete activity is carried out by Robot.

Machine Safety Features

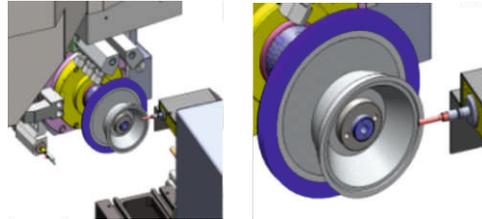
Pneumatic Counter balance for Vertical Axis



During power off condition, counter balance helps in holding the vertical slide from falling down. This provides most important additional safety in addition to motor brake during maintenance

Automation Features :

Auto Wheel Probe



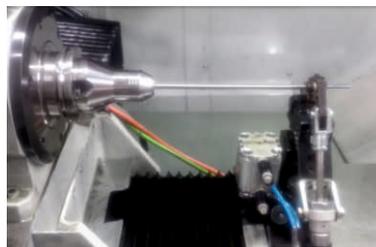
- Wheel offsets (FLD) are accurately measured and transferred to software automatically.

Auto Tool Probe



- Automatically measures the Tool offsets and transferred to software.

CNC Travelling Steady Rest



- Drill is supported continuously below the grinding point
- More suitable for tools having higher L/D ratio
- Top clamp option available for End geometry grinding

Main Door Safety Switch



Main door is provided with safety inter lock such that it does not allow operator to open door during grinding process.

Technical Specifications ** :

DESCRIPTION	UNIT	ECOGRIND VX5
Machine Capacity		
No. of CNC axes		5
Max.work piece diameter	mm	220
Max.work piece length from GPL for face grinding	mm	430
Max.work piece length from GPL for periphery (OD) grinding	mm	490
Max.work piece length from GPL for flute grinding-Helix angle 30°	mm	430
Max.work piece weight	kg	25
Linear axes		
Stroke X Y Z	mm	500 250 500
Rapid Traverse X Y Z	m/min	20 20 20
A-Axis (Work head)		
A Axis Rotation	Deg	Infinite
Rotational Speed - Standard	RPM	1200
Spindle Nose Taper		ISO 50
B-Axis (Wheel head swivel axis)		
Swivel Angle	Deg	+30° / -215°
Rotational Speed - Standard	RPM	50
Wheel Spindle		
No. of grinding spindle ends		1
Auto Wheel Changer with coolant manifold		5 Wheel Packs
Spindle power (Continuous Peak)	kW	16 38 kW
Max. spindle speed	RPM	9000
Auto Wheel changer		
No. of Wheel Packs	No.	5
No. of Coolant manifold	No.	5
Maximum wheel dia	mm	150
Auto Wheel Change time	sec	25
Auto Tool Loader-Robot		
Pallet Capacity		Dia. 3 to 12 mm = 462
		Dia. 12.1 to 20 = 270
		Dia. 20.1 to 32 = 126
CNC System		
Standard		Num Flexium Plus
Software package		
Standard		Numroto
Machine Color		
Base & Coolant Tank		Black Grey (RAL 7021)
Front door & ERP		Grey Aluminium (RAL 9007)
Machine guard & Control Panel		White (RAL 7035)
Other Data		
Electrical Power (Basic Machine)	kVA	25
Floor Plan (WxDxH) with accessories	mm	2150 X 5000 X 2500
Machine Weight	kg	7000
Air Requirement	cfm	8.4
Air Pressure	Bar	5

Automatic Fire extinguisher:



There are chances of oil mist catching fire during grinding which may cause heavy damage to the machine & the operator. As a safety measure use of Automatic Machine Tool fire extinguishing system on machine is mandatory.

NUM CNC



Num Flexium Plus

CNC drives can handle upto 32 axis/spindles and simultaneously interpolate 5 axis or more.

Brushless Axis Motors

Num motors offer an excellent dynamic performance for their concentric running at high as well as very low speed suitable for tool grinding application.

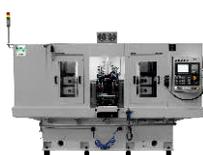
REMOTE DIAGNOSTICS



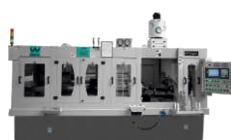
On line support for Tool grinding, Electrical and Mechanical services are provided using remote diagnosis facility in the machine, through modem & telephone/internet connections.

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WIDMA PRODUCTS RANGE



Special Purpose Machine



Deep Hole Drilling Machine



Flexible SPM (Flex Series Machine)



Vertical Turning Lathe



CNC Tool & Cutter Grinder



Fixture & Tooling

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