VIPER ULTRA

HIGH-PERFORMANCE VITRIFIED BONDED GRINDING WHEELS FOR THE PATENTED VIPER GRINDING PROCESS

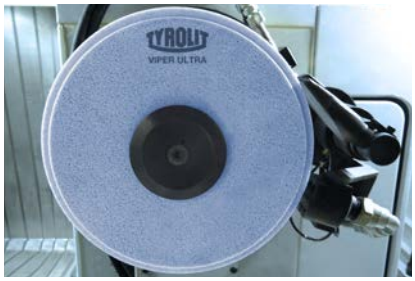
A Company of the SWAROVSKI Group
www.tyrolit.com

TYROLIT

VIPER ULTRA

Together with industry partners, TYROLIT has developed a unique grinding process for the cost-efficient production of turbine blades. The established VIPER ULTRA grinding wheel in combination with the VIPER grinding process delivers extremely high stock removal rates with an exceptionally cool grind. This is especially important for heat sensitive nickel-based materials, which are predominantly used in the turbine industry.

Application
VIPER grinding of turbine components



+ **Shorter Grinding Cycles:** On average, the improved properties of the VIPER ULTRA bond system coupled with the VIPER grinding process deliver a stock removal rate three times higher than is acheivable using a standard grinding process.

+ **Cool grinding:** The highly porous bond system improves the take up of cooling lubricant and grinding chips, reducing the grinding energy on the workpiece.

+ **Approved up to 63 m/s:** The newly developed, exceptionally strong and stable VIPER ULTRA bond matrix enables operating speeds of up to 63 m/s.

+ **Longer life:** Large pore spaces, a special bonding matrix and optimised grain distance reduce the radial wear as well as the dressing amounts. This significantly increases the tool life.

Licensed machine manufacturers
– Makino
– Winbro

Example of application

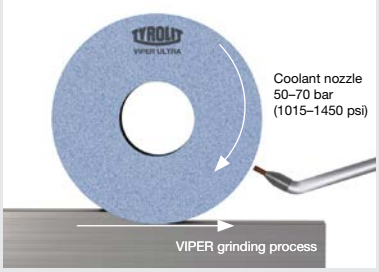
Grinding a fir-tree profile of a turbine rotor vane for the turbine industry
TYROLIT VIPER ULTRA VU33A60II11VB1

Capacity increased by 35 %

VIPER ULTRA		**135 %**
VIPER		100 %

Tool lifetime increased by 67 %

VIPER ULTRA		**250 components**
VIPER		150 components



Schematic diagram of the VIPER grinding process

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