

## About VibroCut

VibroCut GmbH is leading in the development and sale of systems for hybrid machining. Our innovative solutions – with a focus on ultrasonic and oscillation technology – enable both the retrofitting of existing and the equipping of new machine tools. The focus is on precision, efficiency and increased productivity for our customers.

As a provider of complete solutions, we offer you:

- System solutions and tool holders for hybrid machining
- Machine integration and commissioning for seamless implementation
- Customized technology development, tailored to your individual requirements
- Employee training and support for series start-up

The company VibroCut is supported within the framework of the EXIST research transfer program and by funding programs of the Development Bank of Saxony (Sächsische Aufbaubank).

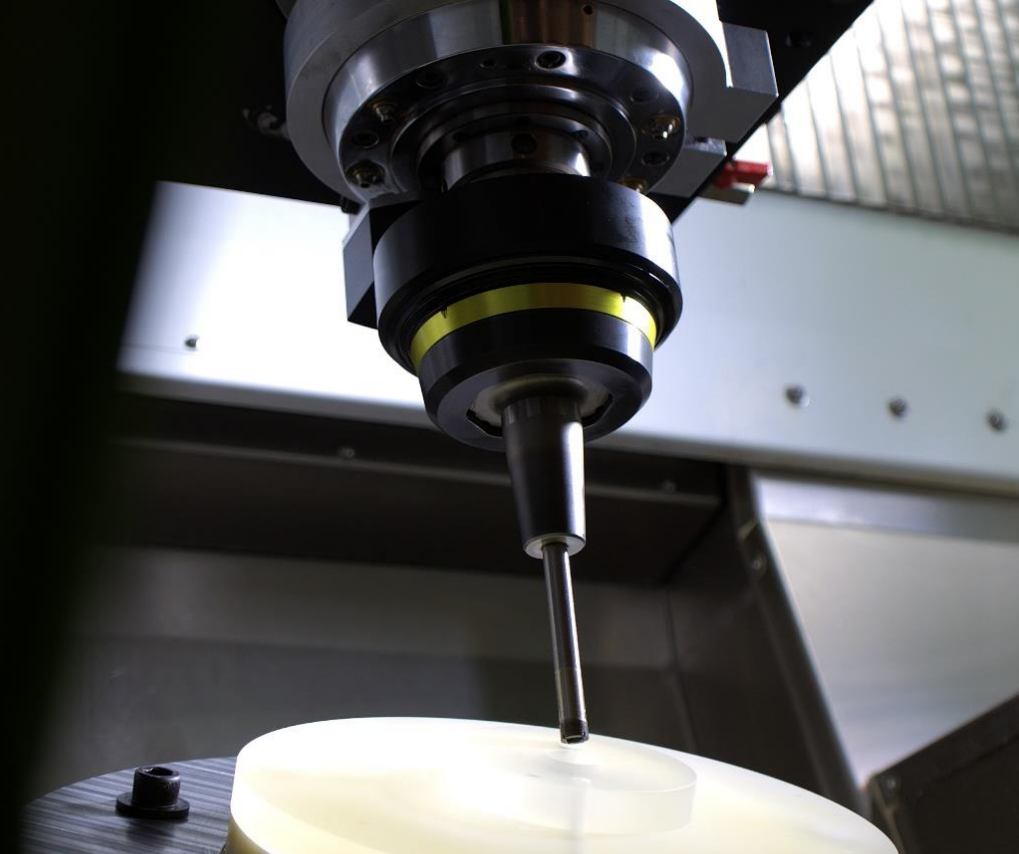
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aufgrund eines Beschlusses  
des Deutschen Bundestages



Kofinanziert von der  
Europäischen Union



The strongest and most precise ultrasound

**VibroCut *ultrasonic***

Solutions for

**ultrasonic-assisted  
grinding**

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**VIBRO CUT**

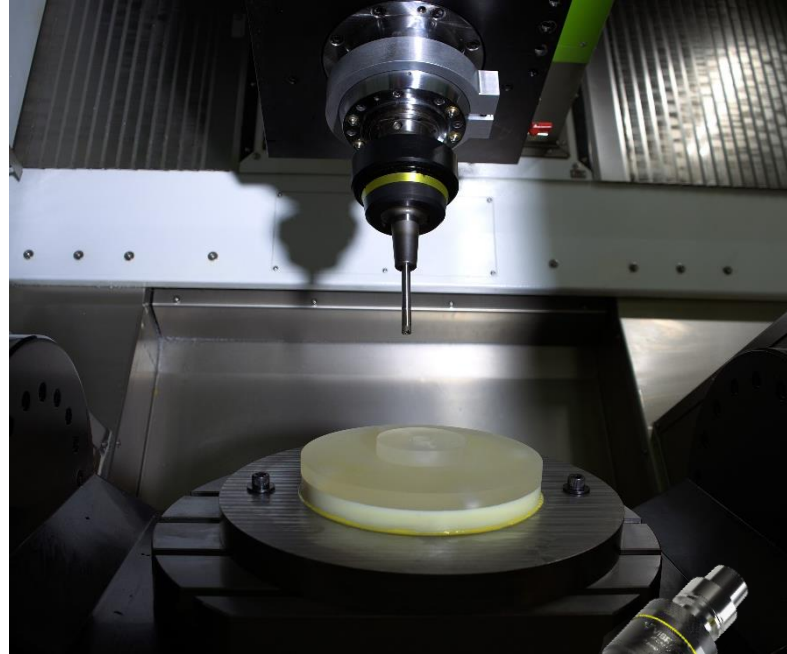
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## Grinding brittle-hard materials “Focus on glass and ceramics”

Glass and ceramics are essential materials for numerous high-tech applications. From quartz glass components for semiconductor production to precise optical lenses and technical ceramics for medical technology – their areas of application are diverse. Sectors such as the optics and semiconductor industry, electronics, medical technology and aerospace benefit from the outstanding properties of these materials: wear resistance, high purity and hardness, thermal and chemical stability.

However, these advantages pose challenges during machining. Typical problems occur when grinding these brittle-hard materials, such as:

1. Low machinability and productivity
2. Development of micro cracks and material breakouts
3. Sensitive components and thermally induced tension
4. Requirements for maximum precision and surface quality



### VibroCut ultrasonic for ultrasonic-assisted grinding

The ultrasonic tool holders cause the machining tool to move at a high frequency, changing both the process kinematics as well as the mechanisms of action during chip formation.

1. **Ultra-fast movement of the abrasive grain**  
The abrasive body is set in an extremely fast motion by the ultrasound, causing each individual abrasive grain to oscillate in addition to its rotational movement in the axial direction.
2. **Efficient material removal**  
The ultrasound causes “micro-hammering”, which breaks up the brittle-hard material on the surface. This makes material removal more efficient and controlled.
3. **Self-cleaning**  
The ultrasound reduces deposits and clogging, so that sharpness and cutting performance are maintained for longer.
4. **Sharpening of the grit**  
The multi-axis and impact load leads to small breakouts on the abrasive grain, resulting in the formation of new sharp cutting edges.

## VibroCut ultrasonic – the strongest and most precise ultrasound

**VibroCut ultrasonic** combines strength and precision. Due to its outstanding performance, high amplitudes are achieved and even larger grinding tools can be moved. An integrated sensor measures the ultrasonic movement directly. Highly dynamic control ensures reproducible oscillation characteristics and raises the precision of ultrasound to a new dimension.

### Performance parameters VibroCut ultrasonic

Ultrasonic frequency	$f_{us} = 16...50 \text{ kHz}$
Amplitude	$\hat{A}_{pp} = 0.1...40 \mu\text{m}$
Performance	$P_{max} = 1,000 \text{ W}$

## Enhancing value for customers

Ultrasonic assistance optimizes grinding processes and reduces machining forces by more than 50%. This unlocks great potential for increasing productivity. Controlled material removal also improves component and surface quality, by minimizing micro-cracks and material chipping. It also improves the processing of challenging materials and sensitive components. Ultrasonic-assisted grinding enables users to meet the growing demands for precision and efficiency as well as achieving significant cost benefits.



Increase in productivity



Increase in component quality



Increase in process reliability



Equipment of new and existing machines

### Key sectors for the use of brittle-hard high-tech materials



Optical and semiconductor industry



Medical engineering



Aerospace