

About VibroCut

VibroCut GmbH distributes systems for vibration-assisted cutting with which both new and existing machine tools can be equipped. We see ourselves as a provider of complete solutions for vibration-assisted machining and offer the following products and services:

- System solutions for vibration-assisted machining
- Machine integration and commissioning
- Customized technology development
- Employee training and support for series start-up

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Federal Ministry
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EXIST



Designing.
The Future.
Together.

on the basis of a decision
by the German Bundestag



Improved chip breaking in turning

VIBROturn

Solutions for
vibration-assisted turning

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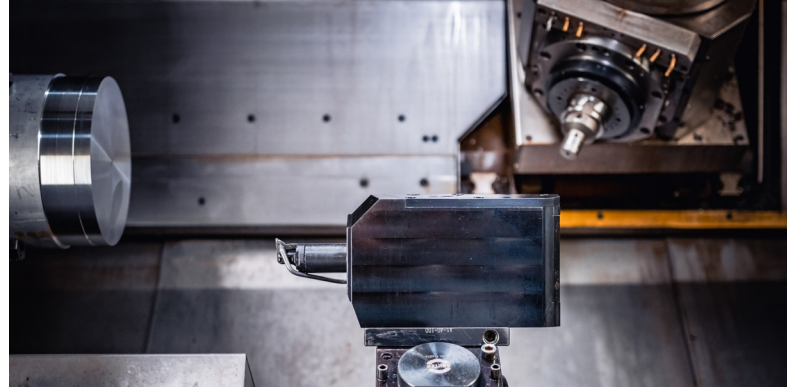
VIBRO CUT

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Chip breaking and chip flow problems

In turning, the chip breaking problem has not yet been solved in a process-safe and reliable manner. The reasons for this problem relate to the continuous cutting engagement. Insufficient chip breaking causes a risk of injury to the machine operator and a variety of problems along the chip flow:

1. Insufficient chip breaking leads to process unreliability – damaged surfaces, tool breakage and clamping errors can be the result.
2. Piles of chips increase the risk of collision.
3. Piles of chips impede the removal by chip conveyors as well as automation.
4. Process stops for manual chip removal reduce machine availability.
5. Frequent change of chip containers is required due to high chip space.
6. Chip reprocessing is inefficient.



Innovation for vibration-assisted turning

The defined oscillation of the tool introduces predetermined breaking points into the chip and improves chip breaking.

The **VIBROturn** tool holders are integrated at the driven position of the turret on lathes. The oscillation frequency is set via the machine control. With the assistance of the adjustable oscillation amplitude, the process is specifically tailored for optimal chip breaking. The innovative construction allows for unique oscillation parameters.

Enhancing value for customers

The innovative **VIBROturn** toolholders enable robust and economical chip breaking behavior, independent of tool wear or batch fluctuations. This increases the process reliability and machine availability of the turning process. Since the conventional turning process is supported the vibration assistance is cycle-time neutral.

Both new and existing machines can be equipped via the standardized toolholder interfaces.



Increase of machine availability



Neutral to cycle time

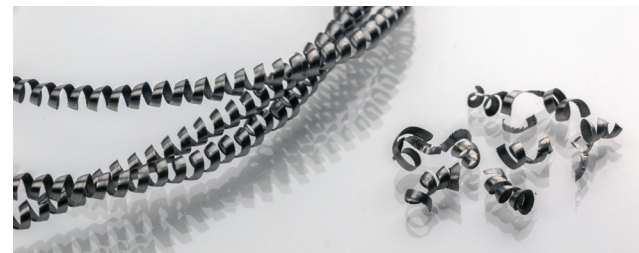
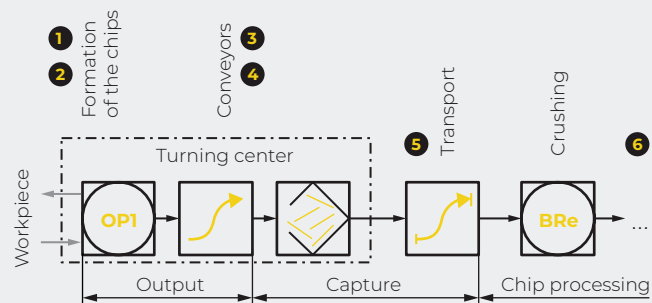


Increase of process reliability



Equipment of new and stock machines

Chip processing



Chip form without (left) and with (right) **VIBROturn**

Performance parameters VIBROturn

Vibration frequency: $f_{\text{vib}} = 1$ to 100 Hz
 Vibration amplitude: $\hat{A} = 0.02$ to 0.6 mm
 Power: $F_{\text{Cmax}} = 9$ kN

Increasing machine availability with VIBROturn

The calculation shows the savings potential for a turning process if machine downtimes due to chip breaking are avoided on a single machine.

Machine hour rate: 85 €/h
 Planned occupancy time: 6,000 h/year \pm 750 shifts/year
 Machine downtime due to chip breakage: 2 to 6 min/h

Downtime due to chip breakage	Loss of use/ year	Downtime costs/ machine
2 min/h	200 h (3,3%)	17,000 €/year
4 min/h	400 h (6,7%)	34,000 €/year
6 min/h	600 h (10%)	51,000 €/year