

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

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Improved chip breaking in turning

VibroCut *oscillate*

Solutions for

**oscillation-assisted
turning**

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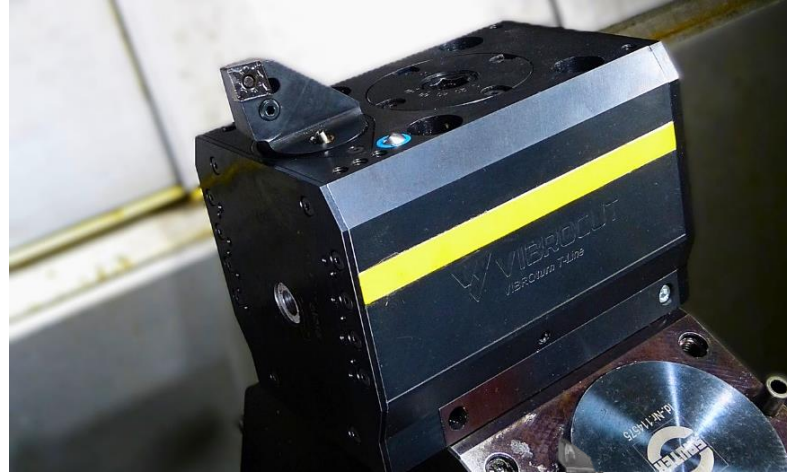
 **VIBRO CUT**

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Chip breaking and chip flow problems

In turning, the problem of chip breakage has not yet been solved in a process-safe manner. The reasons for this problem lie in 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.

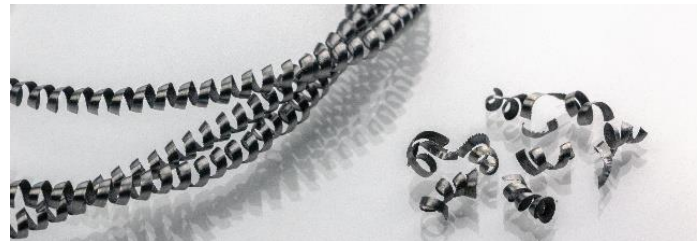


Innovation for oscillation-assisted turning



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

The **VibroCut oscillate** 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.



Chip form without (left) and with (right) VibroCut oscillate

Performance parameters VibroCut oscillate

Oscillation frequency	$f_{os} = 1...100 \text{ Hz}$
Amplitude	$\hat{A}_{pp} = 0.02...0.6 \text{ mm}$
Process forces	$F_{Cmax} = 9 \text{ kN}$

Enhancing value for customers

The innovative **VibroCut oscillate** 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 oscillation assistance is cycle-time neutral. Both new and existing machines can be equipped via the standardized toolholder interfaces.



Increase of machine availability



Increase in productivity

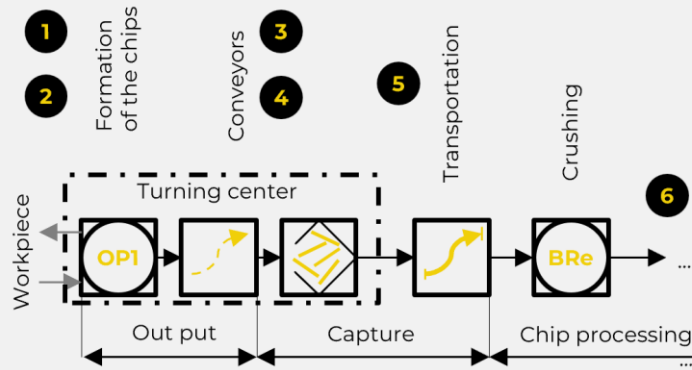


Increase in process reliability



Equipment of new and existing machines

Chip processing



Increase in machine availability

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:	45 €/h
Planned occupancy time:	6000 h/year \approx 750 shifts/year
Machine downtime due to chip breakage:	2-6 min/h

Downtime due to chip breakage	Loss of use / year	Downtime costs / machine
2 min/h	200 h (3.3 %)	9,000 €/year
4 min/h	400 h (6.7 %)	18,000 €/year
6 min/h	600 h (10 %)	27,000 €/year