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Press Release

July 29th, 2022

New Technology Cycle against Chip Troubles “Chip Breaking”

DMG MORI CO., LTD. (hereinafter referred to as “DMG MORI”) has released “Chip Breaking”, a new Technology Cycle to break up chips into small pieces through fine vibration of the feed axis during machining. Chip Breaking effectively prevents long and stringy chips, and therefore chip-caused machine tool troubles, making it a must-have for automated production.

Many manufacturers are troubled by long and stringy chips generated during machining processes. These chips may wind around the cutting tool and negatively affect machining, such as by deteriorating accuracy. In the worst case, they may clog the chip conveyor and cause machine defects or stops, diminishing the time for machine operation. Copper and aluminum are prone to creating long chips that cannot be dealt with simply by adjusting cutting conditions or using a conventional chip breaker; they also require chip removal by hand, inching, mill-turn machining and chip breaking by high-pressure coolant. However, these measures involve additional tools, equipment, setup time and manual work, leading to higher costs and reduced machine operation.

DMG MORI has developed the optimal solution for these chip troubles. The Technology Cycle “Chip Breaking” makes it possible to break chips in small pieces through tool vibration in feed direction aligned with the rotation of the spindle. This short non-contact moment between the tool and workpiece effectively breaks up the cutting chips of metals with long chips such as resin, pure copper, or pure aluminum. In addition, “Chip Breaking” applies to a wide range of cutting processes from outer diameter cutting to grooving, drilling, inner diameter cutting and more.

Interactive guidance makes it easy to create Chip Breaking programs in CELOS, and the vibration load prediction enables checking of safe cutting conditions in advance, making “Chip Breaking” an easy and safe tool for anyone. Also, “Chip Breaking” is available as retrofit for existing machine tools of customers. *1

“Chip Breaking” is the perfect solution for cutting chip-caused troubles and frees customers from redundant chip removal work, thus drastically reducing time and cost. Moreover, “Chip Breaking” prevents machine stops and machining trouble, and as such facilitates automation and production improvement, while making your factory environment cleaner and safer.

【 Contact 】 Public Relations / Marketing Dept. E-mail: users@dmgmori.co.jp

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Please take a look at the video on our official website below.
https://www.dmgmori.co.jp/en/movie_library/movie/id=6281

■Main features

I. Effective break up of cutting chips during machining
+ Feed axis vibration in synch with spindle rotation to break up chips
+ Chip length adjustable by setting different vibration frequencies per spindle rotation
+ No coolant needed for chip break up

II. Applicable to various processes and materials
+ Available for grooving, drilling, outer/inner diameter machining and others*2
+ Effectively breaks up long chips from resin, pure copper and pure aluminum as well

III. Easy programming with interactive guidance
+ 80% shorter programming time*3
+ Possible to predict in-process vibration and confirm safe cutting conditions
+ Automatic control of cutting conditions to suppress excessive vibrations

DMG MORI will continue to attend to customer needs and develop highly functional, reliable and investment-worthy products.

Product name	Technology Cycle “Chip Breaking”
Applicable machines*4	・NLX series (Turning Centers) ・NTX series (Mill-Turn Machines) ・NZX series (4-axis Mill-Turn Machines)*1

*1 Depending on the specification, some machines may not be applicable.
*2 Only applicable for face milling, outer/inner diameter machining, drilling, grooving, profiling and taper machining with vibration in 1 axial direction.
*3 Based on actual data.
*4 Data as of July 2022. Sales for NZX series planned to start in September 2022.

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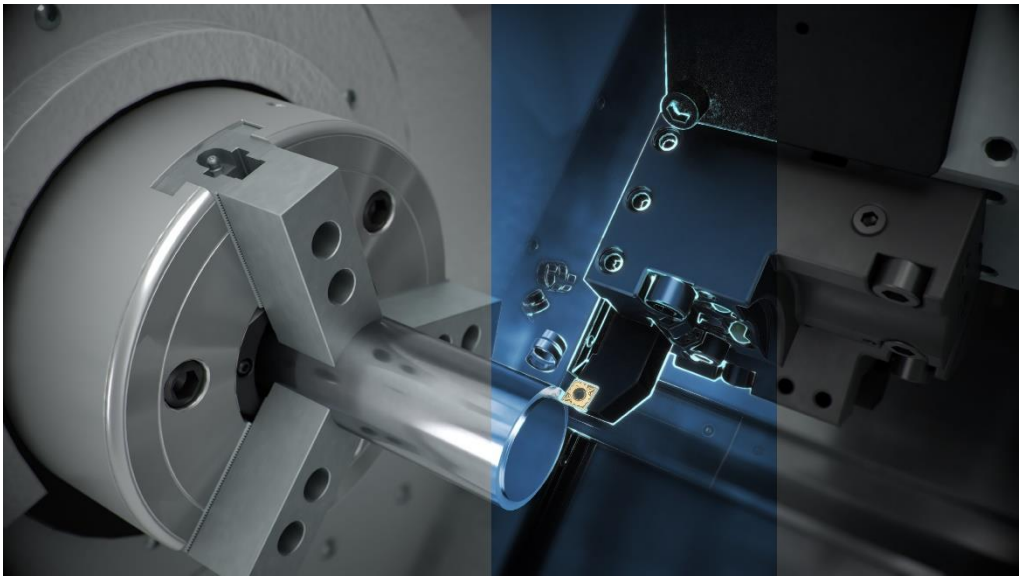
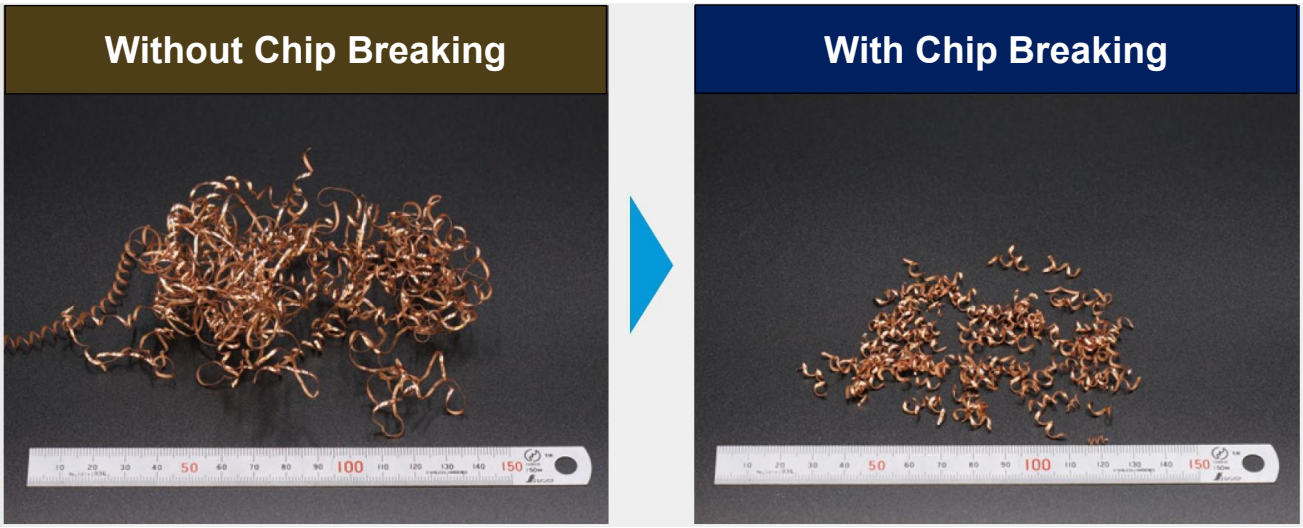


Technology Cycle “Chip Breaking”



Comparison of pure copper cutting chips