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Find further details
on fine bubble products here →



FB-ASSIST



2017



2018



2019

Launched in 2020



Fine bubble generator for grinding

FB-ASSIST

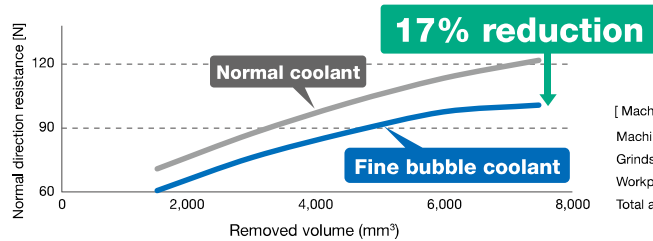


FB-ASSIST P Series, MGC154, MGC205

Benefits of introduction

Benefit 1: Productivity and quality are improved with reduced workpiece warping

The reduced grinding load can be expected to reduce the warping of the workpiece.



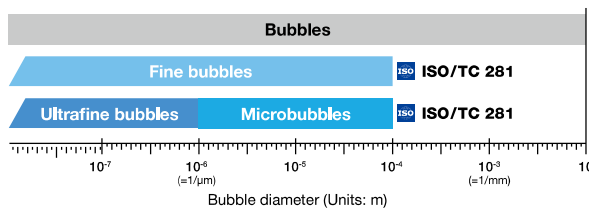
[Machining test conditions]
 Machine tool: Surface grinder MSG-618CNC-HS
 Grindstone: Diamond #200 φ180
 Workpiece: Carbide VM50 (L178 × W84 × T30 mm)
 Total amount of cutting: 0.5 mm

	Normal coolant		Fine bubbles	
	Finished surface	Warping	Finished surface	Warping
Cut 2 μm	○	0.05 mm	○	0.02 mm
Cut 3 μm	Grinding burn	1.0 mm	○	0.05 mm

[Machining test conditions]
 Machine tool: Surface grinder SP1164EB
 Grindstone: Borazon #170 φ300 mm
 Workpiece: SUS304 (L150 × W40 × T6 mm)
 Total amount of cutting: 0.15mm

What are fine bubbles?

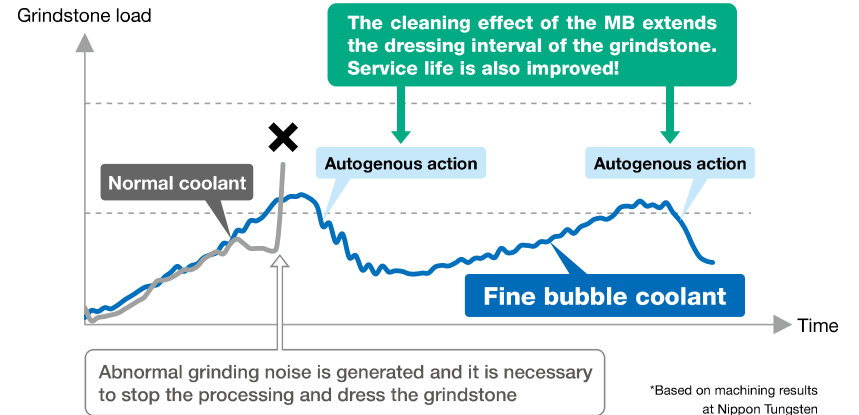
Bubbles smaller than 100 μm in diameter are called fine bubbles (FB). Also, those with diameters from 1 μm to 100 μm are called microbubbles (MB), and those with diameters less than 1 μm are called ultrafine bubbles (UFB).



Benefit 2

The dressing interval becomes three times longer, reducing production downtime

< Conceptual image of grindstone load and time when amount cut is 30 μm >



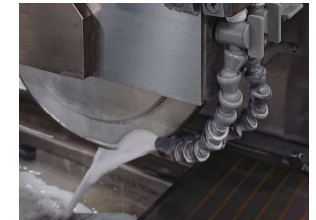
Benefit 3

The amount of cutting becomes 1.5 times greater, improving production efficiency

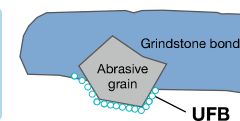
[Grinding] Effective for improving machining efficiency

(Machining results data from Nippon Tungsten)

	Carbide (WC-Co)	Ceramic (Si3N4)	Steel (SKD11)
Surface grinding	200%	200%	200%
Cylindrical grinding	150%	150%	—
Internal grinding	150%	150%	—

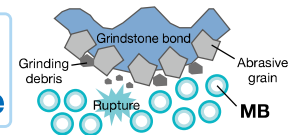


UFB effect Permeability



Coolant containing UFB has improved wettability. This makes it easier for the coolant to penetrate into narrow gaps on the workpieces and tools.

MB effect Cleaning performance



The shock waves when the MB rupture remove the grinding debris attached to the grindstone and the workpiece surface.

Comments from user companies

case : 1 “There is no warping and the processing time is also reduced”

Mr. I, President, mold processing industry

We are aiming for high-precision manufacturing and installed the product to improve quality. We used it in SKD grinding and found that there was no warping and the machining time was shortened. This paid for the cost of the UFB generator in two months.

< Comments from machining staff >

There is no fear of failures occurring, so I can perform the machining with peace of mind. I couldn't do the machining without UFB.

case : 2 “Dressing interval tripled”

Mr. O, Section Manager, automotive parts processing manufacturer

We conducted an evaluation for the purpose of cost reduction and the results showed that the dressing interval was extended by three times, so we purchased it.

case : 3 “Improved capacity on outdated equipment”

Mr. I, Section Manager, high speed steel die processing manufacturer

We are using it in the grinding of hardened high speed steel and die steel. The feeling of the operator was that the chattering and deep scratches on the surface being ground were eliminated. The capacity of outdated equipment has been improved.

case : 4 “Up to 102% improvement in machining efficiency”

Mr. I, Section Manager, carbide tool manufacturer

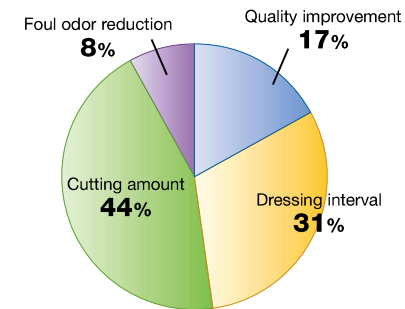
In superfine cemented carbide and SKD surface grinding, the cutting amount was increased by between 43% and 102%, contributing to the improvement of machining capacity.

*Comments from users who have introduced fine bubble related products from Nippon Tungsten.
*We have confirmed that all our company devices generate sufficient MB/UFB.

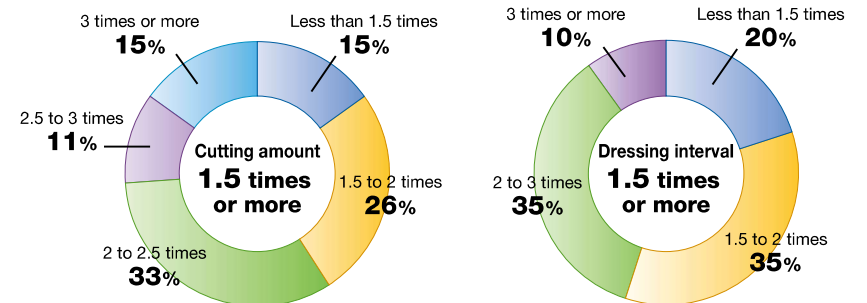
Evaluations by customers

The effect was recognized by **75%** of customers who conducted evaluations in the grinding of carbide and hardened steel.*

*This is the trend in 163 demo evaluations at users of fine bubble related products from Nippon Tungsten.

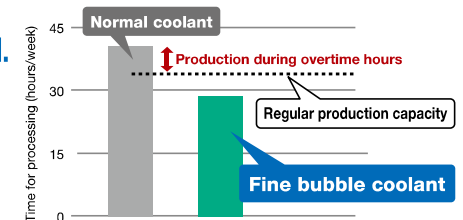


Many customers felt that the cutting amount was increased and the dressing interval was extended. In addition, we received comments that there were quality improvement effects, such as reduced grinding burn, warping, and scratching, that the foul odor of the coolant was reduced, and that cleaning the coolant tank had become easier.



Improved production efficiency on existing equipment can be expected.

The increase in the cutting amount and the extension of the dressing interval mean that the production efficiency of existing equipment can be expected to improve. In an example of machining at our company where the cutting amount was increased by 40%, the production time per grinding machine could be reduced by 29% compared with the previous value.



Introduction to the models sold

Fine bubble generator
for grinding

FB-ASSIST P Series



MGC154 (Left on photo)
MGC205 (Right on photo)

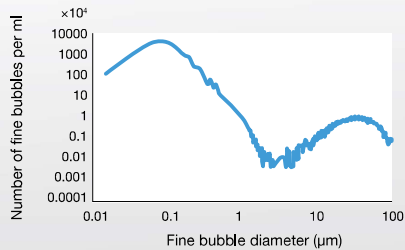


MGL073 (Left on photo)
MGL053 (Right on photo)

Small but powerful

Generates both UFB and MB

There are 100 million UFB per ml and
1 million MB per ml generated.
(Minimum value for four models of fine bubble generator)



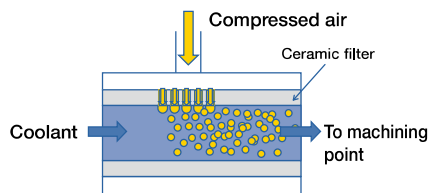
Simple installation

Compact design for thread connection
installation anywhere



To complete the preparations,
it is only necessary to connect
the product with the thread in
the middle of the piping route
and take in the factory air (0.4
MPa compressed air).
No special construction work
is required.

▼ Mechanism of fine bubble generation [Specification list]

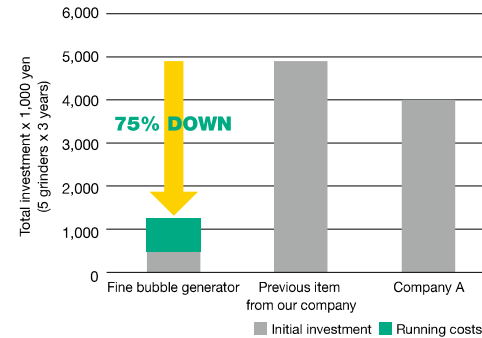


	MGC205	MGC154	MGL073	MGL053
Thread diameter	Rc1/2	Rc3/8	Rc1/4	Rc1/8
Flow/min.	10-40 L	10-30 L	3-10 L	1-7 L
Air flow rate	7.0 L/min.	7.0 L/min.	4.0 L/min.	4.0 L/min.
Weight	660 g	355 g	202 g	140 g

*In order to maintain performance, we recommend replacing the filter inside annually. *Select the model number according to the coolant flow rate used.

Introduction of fine bubbles at low cost

Simulation of total investment to install
fine bubble generators on five grinders for three years



Fine bubbles can be introduced at a lower cost than
with our previous models.
This product is recommended for everyone from
those who are introducing fine bubbles for the first
time, to those who want to introduce it on multiple
grinders over a long time.

[Total investment]

(thousands of yen)

	Cumulative total investment for one year	Cumulative total investment for two years	Cumulative total investment for three years
Fine bubble Generator	500	875	1,250
Previous item from our company	4,900	4,900	4,900
Company A	4,000	4,000	4,000

Frequently asked questions

Q. What kind of conditions are necessary to demonstrate the performance?

A. If the coolant has deteriorated, there is a risk that the performance may not be fully demonstrated. We recommend replacing the coolant and cleaning the tank.

Q. Can I use any kind of coolant?

A. The products can only be used with water-soluble coolant. With oil-based solvent, it is not possible to generate a sufficient number of fine bubbles, so there is no effect.

Q. Is the fine bubble generator also effective for cutting?

A. There have been experimental results showing that microbubbles may adversely affect the wear of cutting tools, so we do not recommend the use of a fine bubble generator in cutting applications.

Q. How many years is the warranty period after delivery?

A. It is for one year after delivery. The details are as stated in the instruction manual. Using the products for a long time leads to the clogging of the filter inside it, so we recommend parts replacement once a year.

Q. How long is the delivery period?

A. Shipment is possible within one week of the receipt of the order.