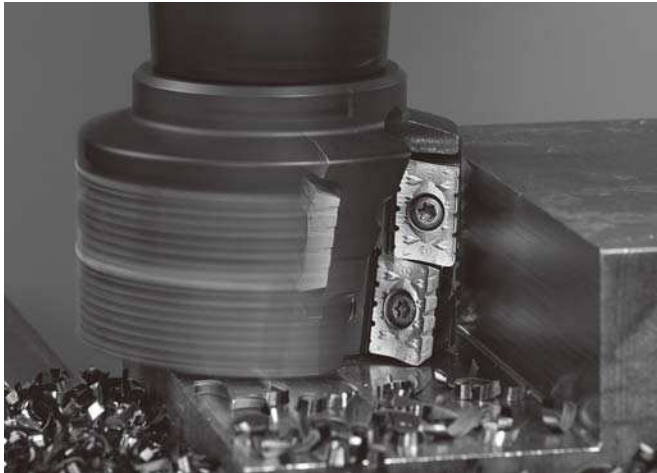


Heavy Milling Cutter MSR

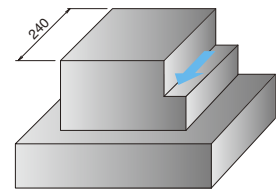
Case Studies



St42-2 (SS400)

- Base
- $V_c=150\text{m/min}$ ($n=478\text{min}^{-1}$)
- $ap_{x\text{ae}}=40 \times 15\text{mm}$
- $f_z=0.15\text{mm/t}$ ($V_f=430\text{mm/min}$)
- Dry (Air blow)
- MSR100R-2
- 6 flutes
- APMT250616ER-NB3
- APMT250616ER-NB4

(PR660)



MSR

Chip Removal Rate = 258cc/min.

Competitor's Cutter A

Chip Removal Rate = 43cc/min.

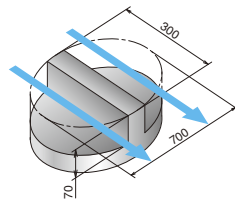
Since MSR is able to machine a greater ap than competitor.
Cutter A [dia 100mm (6 edges) $V_c=150\text{m/min}$ $f_z=0.12\text{mm/t}$ ($V_f=344\text{mm/min}$) $ap_{x\text{ae}}=5 \times 25\text{mm}$] Chip Removal rate=43cc/min, the cutting time is drastically improved.

(Evaluation by the user)

C45 (S45C)

- Plate
- $V_c=140\text{m/min}$ ($n=446\text{min}^{-1}$)
- $ap_{x\text{ae}}=43 \times 15$
- $f_z=0.2\text{mm/t}$ ($V_f=535\text{mm/min}$)
- Dry
- MSR100R-2
- 6 flutes
- APMT250616ER-NB3
- APMT250616ER-NB4

(PR660)



MSR

Chip Removal Rate = 345cc/min.

Competitor's Cutter B

Chip Removal Rate = 33cc/min.

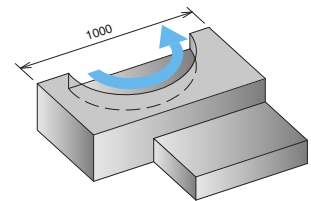
Since MSR is able to evacuate more than 10 times as many chips as competitor Cutter B [dia 125mm (6 Edges) $V_c=120\text{m/min}$ $f_z=0.1\text{mm/t}$ ($V_f=184\text{mm/min}$) $ap_{x\text{ae}}=6 \times 30\text{mm}$] Chip Removal rate= 33cc/min, the cutting time is improved.

(Evaluation by the user)

C35 (S35C)

- Bracket
- $V_c=150\text{m/min}$ ($n=478\text{min}^{-1}$)
- $ap_{x\text{ae}}=20 \times 70$
- $f_z=0.25\text{mm/t}$ ($V_f=718\text{mm/min}$)
- Dry (Mist)
- MSR100R-2
- 6 flutes
- APMT250616ER-NB3
- APMT250616ER-NB4

(PR660)



MSR

Chip Removal Rate = 1005cc/min.

Competitor's Cutter C

Chip Removal Rate = 417cc/min.

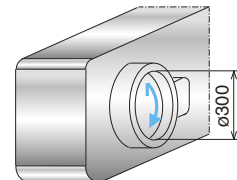
Since MSR is able to cut stably even by increasing feed rate 2.4 times compared competitor Cutter C [dia 100mm (6 edge lines) $V_c=130\text{m/min}$ $f_z=0.12\text{mm/t}$ ($V_f=298\text{mm/min}$) $ap_{x\text{ae}}=20 \times 70\text{mm}$], cutting efficiency is improved.

(Evaluation by the user)

GS-45 (SC450)

- Construction Machine Part
- $V_c=125\text{m/min}$ ($n=400\text{min}^{-1}$)
- $ap_{x\text{ae}}=15 \times 45\text{mm}$
- $f_z=0.15\text{mm/t}$ ($V_f=360\text{mm/min}$)
- Dry
- MSR100R-2
- 6 flutes
- APMT250616ER-NB3
- APMT250616ER-NB4

(PR660)



MSR

Chip Removal Rate = 244cc/min.

Competitor's Cutter D

Chip Removal Rate = 122cc/min.

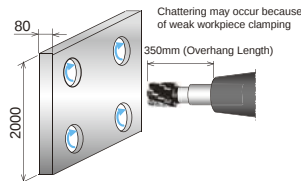
Even with double the feed rate, stable machining was possible, and machining efficiency was improved compared with Competitor Cutter D [Dia. 100(4 edges) $V_c=125\text{m/min}$ $f_z=0.08\text{mm/t}$ ($V_f=180\text{mm/min}$) $ap_{x\text{ae}}=15 \times 45\text{mm}$]

(Evaluation by the user)

St42-2 (SS400)

- Plate
- $V_c=200\text{m/min}$ ($n=640\text{min}^{-1}$)
- $ap_{x\text{ae}}=80 \times 10\text{mm}$
- $f_z=0.06\text{mm/t}$ ($V_f=230\text{mm/min}$)
- Dry
- MSR100R-4 (4Stage type)
- 6 flutes
- APMT250616ER-NB3
- APMT250616ER-NB4

(PR660)



MSR

Chip Removal Rate = 184cc/min.

Competitor's Cutter E

Chip Removal Rate = 78cc/min.

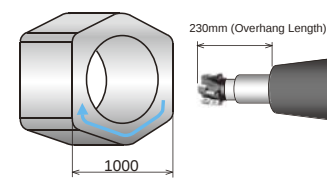
Comparing to Competitor Cutter E's [ø100 (4 Edges) $V_c=250\text{m/min}$ $f_z=0.06\text{mm/t}$ ($V_f=200\text{mm/min}$) $ap_{x\text{ae}}=39 \times 10\text{mm}$] Chip Removal Amount = 78cc/min., MSR had Chip Removal Amount = 184cc/min due to its large cut (ap) and improved machining efficiency by 2.3 times with quiet cutting sound.

(Evaluation by the user)

GGG50 (FCD500)

- Construction Machine Part
- $V_c=173\text{m/min}$ ($n=550\text{min}^{-1}$)
- $ap_{x\text{ae}}=5 \times 50\text{mm}$
- $f_z=0.2\text{mm/t}$ ($V_f=660\text{mm/min}$)
- Dry
- MSR100R-2
- 6 flutes
- APMT250616ER-NB3
- APMT250616ER-NB4

(PR905)



MSR

Chip Removal Rate = 165cc/min.

Competitor's Cutter F

Chip Removal Rate = 51cc/min.

Comparing to Competitor Cutter F's [ø100 (6 Edges) $V_c=90\text{m/min}$ $f_z=0.2\text{mm/t}$ ($V_f=343\text{mm/min}$) $ap_{x\text{ae}}=3 \times 50\text{mm}$] Chip Removal Amount = 51cc/min., MSR had Chip Removal Amount = 165cc/min. and improved cutting efficiency by 3.2 times.

(Evaluation by the user)

M



Milling