XEBEC Applications

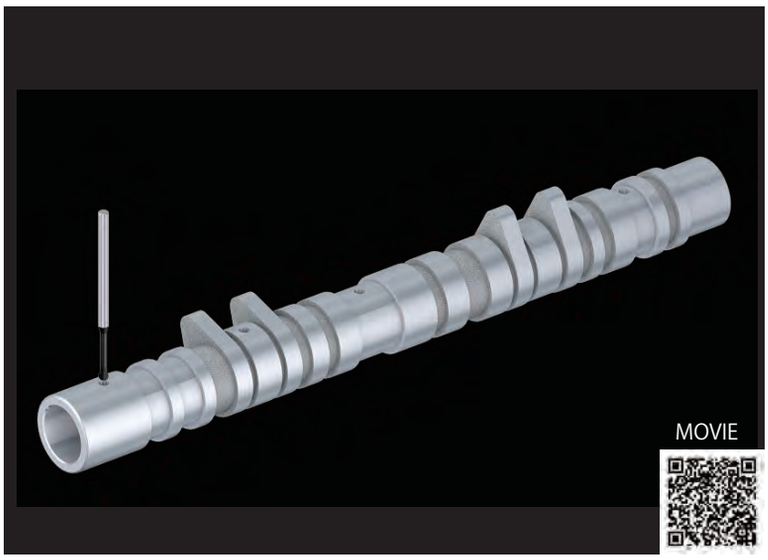
INDEX

BEAUTIFUL DEBURRING®

Automotive

Applications

Camshaft



Workpiece information

Industry	Automotive
Part name	Camshaft
Material type	FCD
Cutting process	Drilling

Processing conditions

Tool	XEBEC Back Burr Cutter and Path (XC-38-A)
Processing detail	Back deburring after drilling
Spindle Speed (min $^{-1}$)	9,000
Table Feed (mm/min)	1,000
Depth of cut (mm)	0.25
Machining time (sec)	—

Before

Tool — Spring-type back deburring tools

Problem — Uneven edge resulted in over-deburring or incomplete deburring.

After

Tool — XEBEC Back Burr Cutter and Path (XC-38-A)

Result — Uniform edge quality in shorter operating time realized.

Deburring after drilling

Tool XEBEC Back Burr Cutter and Path ™

Perfect for deburring both front and back of a drilled hole

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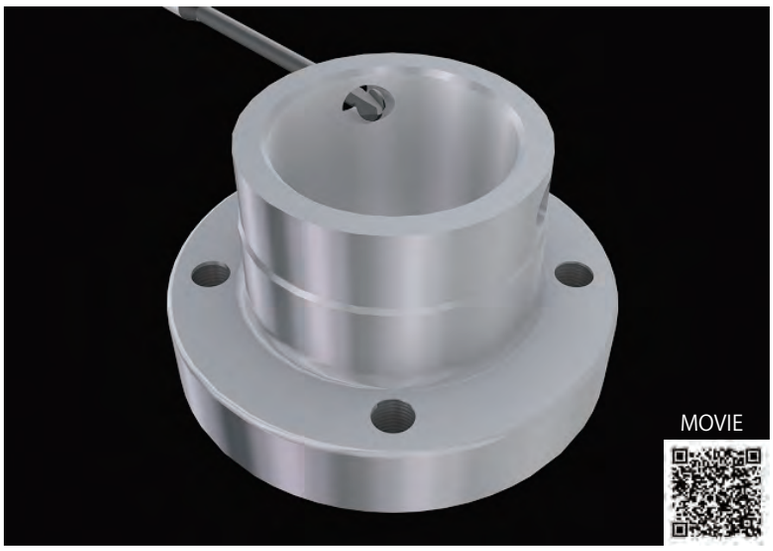
XEBEC® BEAUTIFUL DEBURRING

Applications

Flange (Mounting hole)



Workpiece information

Industry	Automotive
Part name	Flange (Mounting hole)
Material type	Aluminum
Cutting process	Drilling

Processing conditions

Tool	XEBEC Back Burr Cutter and Path (XC-38-A)
Processing detail	Back deburring after drilling
Spindle Speed (min^{-1})	6,000
Table Feed (mm/min)	900
Machining time (sec)	—

Before

Tool — Curved bearing scraper

Problem — CNC deburring was not possible due to an off-centered edge. It was not possible to make a path data by users. Manual deburring was time-consuming because no scratch was allowed on a certain part of workpiece.

After

Tool — XEBEC Back Burr Cutter and Path (XC-38-A)

Result — Edge quality improved by CNC deburring. Defective products caused by scratches eliminated.

Deburring after drilling

Tool XEBEC Back Burr Cutter and Path™

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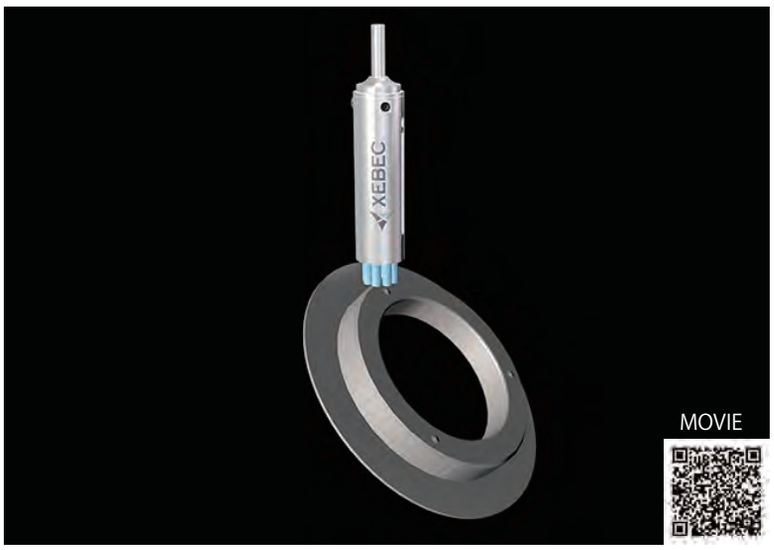
Applications

Yoke



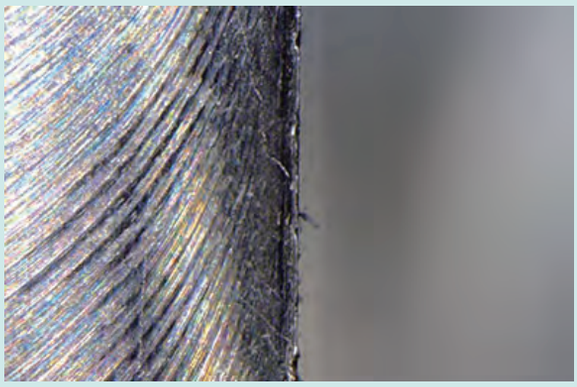
Workpiece information

Industry	Automotive
Part name	Yoke
Material type	SUS430
Cutting process	Chamfering

Processing conditions

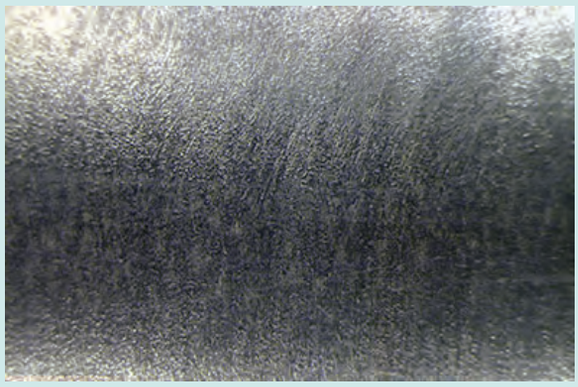
Tool	XEBEC Brush Surface (A31-CB25M)
Processing detail	Deburring the section after chamfering process
Spindle Speed (min $^{-1}$)	3,000
Table Feed (mm/min)	—
Depth of cut (mm)	1
Machining time (sec)	—

Before

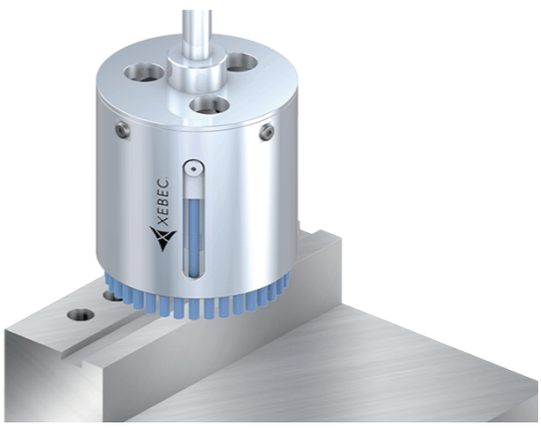


Tool	Cutter, sandpaper
Problem	Manual deburring caused unstable quality and high labor cost.

After



Tool	XEBEC Brush Surface (A31-CB25M)
Result	Fully automated deburring enabled stable quality and shorter processing time. Also the efficiency of processing improved by changing the burr direction by review of pre-process.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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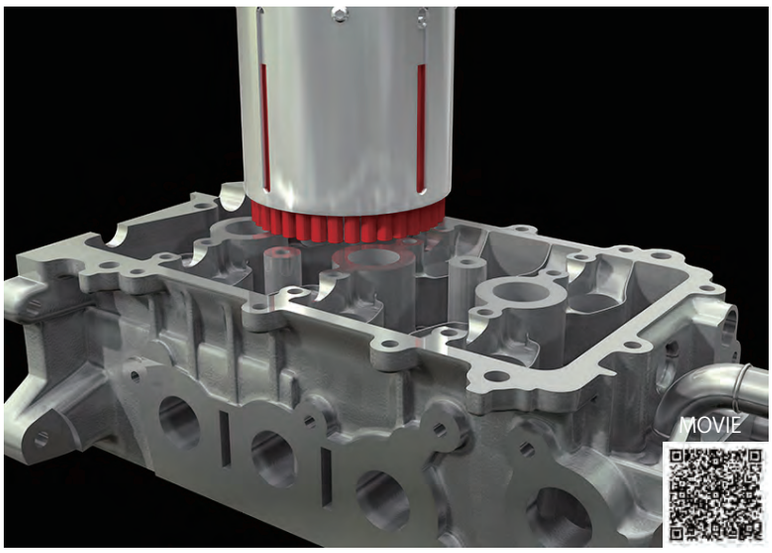
XEBEC® BEAUTIFUL DEBURRING

Applications

Cylinder head (Matching surface)



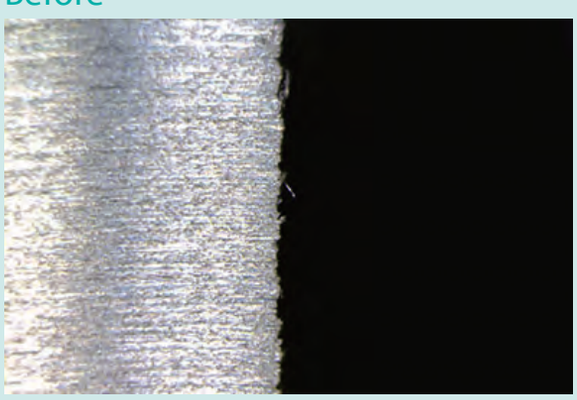
Workpiece information

Industry	Automotive
Part name	Cylinder head (Matching surface)
Material type	ADC12
Cutting process	Face milling processing

Processing conditions

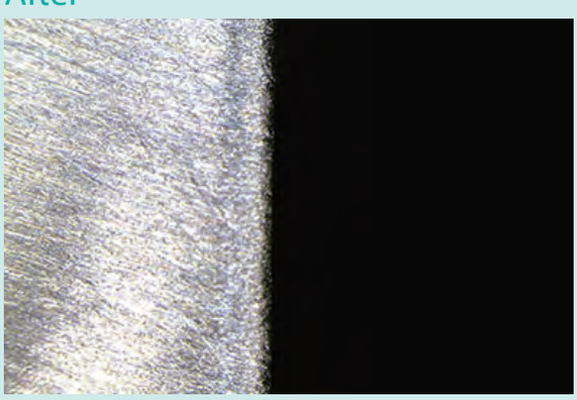
Tool	XEBEC Brush Surface (A11-CB100M)
Processing detail	Deburring of the matching surface after face milling process.
Spindle Speed (min $^{-1}$)	1,350
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

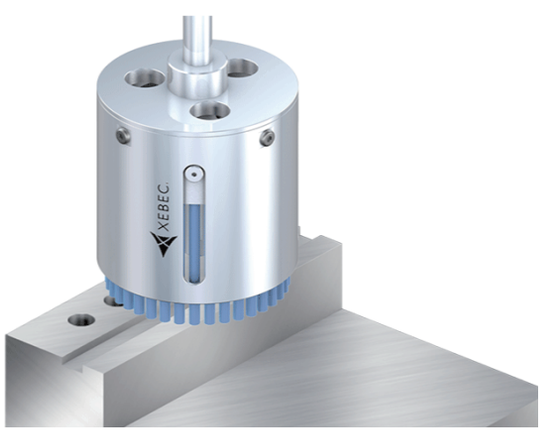


Tool	Abrasives-impregnated nylon brush
Problem	It took long hours for deburring and burrs still remained after processing due to low grinding power. Moreover, workpiece was stained by nylon brushes and man-hour is required for cleaning.

After



Tool	XEBEC Brush for Surface (A11-CB100M)
Result	Shorter cycle time was realized by high-feed processing. Coolant contamination was reduced to one third and man-hour for cleaning saved.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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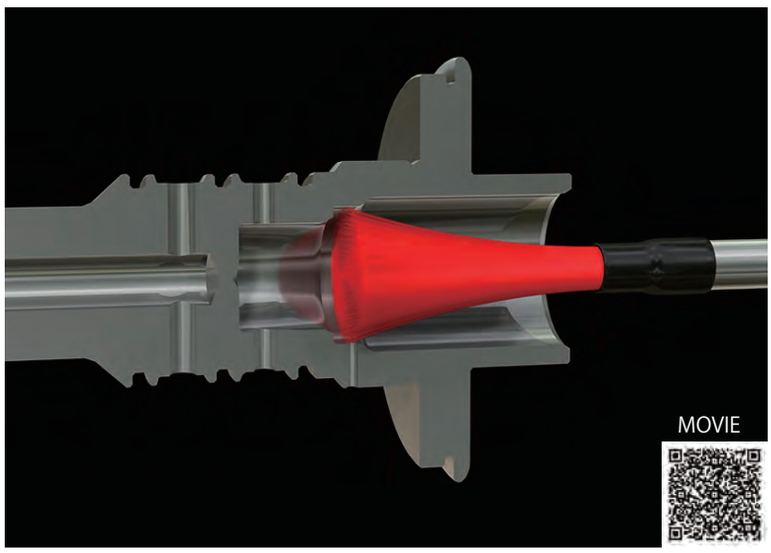
XEBEC® BEAUTIFUL DEBURRING

Applications

Input shaft (Cross hole)



Workpiece information

Industry	Automotive
Part name	Input shaft (Cross hole)
Material type	SCM
Cutting process	Drilling

Processing conditions

Tool	XEBEC Brush™ Crosshole (CH-A12-5M + CH-A12-7M)
Processing detail	Crosshole deburring after drilling process
Spindle Speed (min $^{-1}$)	9,000
Table Feed (mm/min)	300

Before

Tool — Abrasive-impregnated nylon brush

Problem — Burrs are left by manual deburring. It caused low efficiency in processing.

After

Tool — XEBEC Brush for Cross hole (CH-A12-5M + CH-A12-7M)

Result — Full automation realized with custom made machine. No burrs left and finish quality improved.

Deburring after drilling
Cutter mark removal and polishing on inner diameter

Tool XEBEC Brush ™ Crosshole

Ideal for deburring, polishing and cutter mark removal of inner diameter and counterbored part

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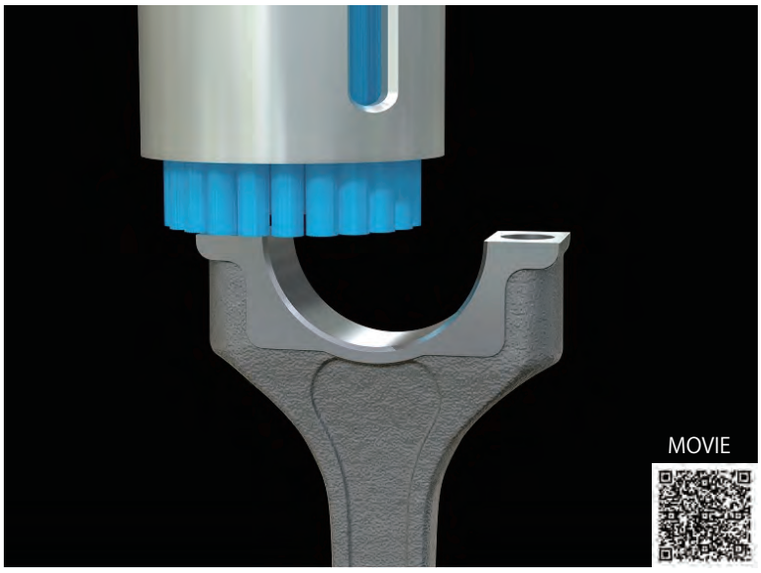
XEBEC® BEAUTIFUL DEBURRING

Applications

Connecting rod (Matching surface)



Workpiece information

Industry	Automotive
Part name	Connecting rod (Matching surface)
Material type	S45C
Cutting process	Front cutter processing

Processing conditions

Tool	XEBEC Brush for Surface (A31-CB40M)
Processing detail	Deburring the matching surface after face milling process
Spindle Speed (min $^{-1}$)	1,300
Table Feed (mm/min)	2,800
Depth of cut (mm)	0.4
Machining time (sec)	—

Before

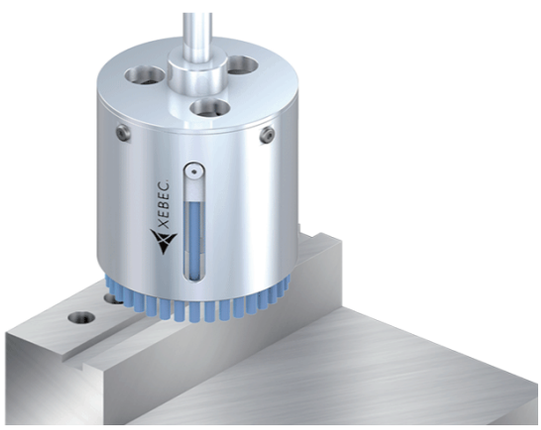
Tool: Abrasive-impregnated nylon brush

Problem: Burrs remain after deburring by nylon brush due to low grinding power. Additional manual deburring required. Quality unstable and labor cost increased.

After

Tool: XEBEC Brush for Surface (A31-CB40M)

Result: No burrs left and deburring quality stabilized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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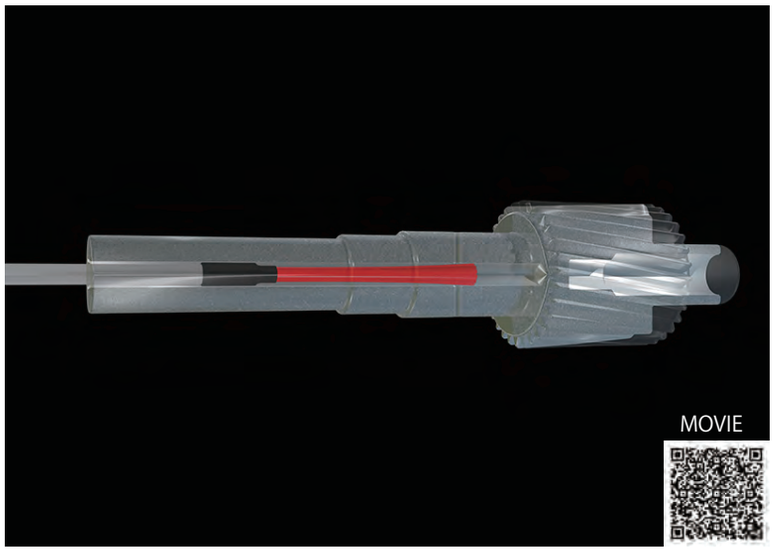
XEBEC® BEAUTIFUL DEBURRING

Applications

Reduction gear (Cross hole)



Workpiece information

Industry	Automotive
Part name	Reduction gear (Cross hole)
Material type	Scr420
Cutting process	Drilling

Processing conditions

Tool	XEBEC Brush Crosshole (CH-A12-3L)
Processing detail	Crosshole deburring after drilling process
Spindle Speed (min $^{-1}$)	10,800
Table Feed (mm/min)	300

Before

Tool — Wire brush

Problem — Burr remained by low grinding power. Quality unstable due to deformation of brush material.

After

Tool — XEBEC Brush Crosshole (CH-A12-3L)

Result — Burr eliminated and stable quality realized at mass-production line.

Deburring after drilling
Cutter mark removal and polishing on inner diameter

Tool XEBEC Brush ™ Crosshole

Ideal for deburring, polishing and cutter mark removal of inner diameter and counterbored part

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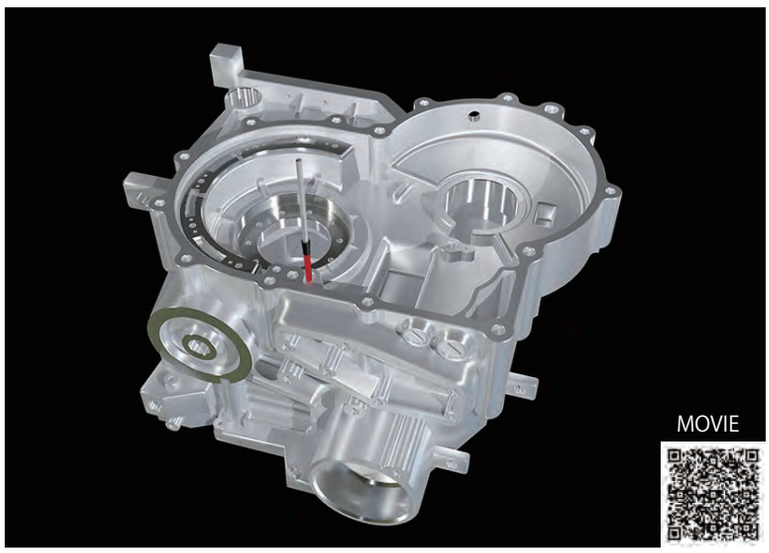
Applications

Transmission case (Cross hole)



Workpiece information

Industry	Automotive
Part name	Transmission case (Cross hole)
Material type	ADC12
Cutting process	Drilling

Processing conditions

Tool	XEBEC Brush Crosshole (CH-A12-7L)
Processing detail	Crosshole deburring after drilling process
Spindle Speed (min $^{-1}$)	7,200
Table Feed (mm/min)	300

Before

Tool — Twisted brushes and rotary tool

Problem — Twisted brush was used with rotary tool. It took man-hour for deburring the inside diameter by manual work.

After

Tool — XEBEC Brush Crosshole (CH-A12-7L)

Result — By introduction of automated deburring, workability and quality of inside diameter improved.

Deburring after drilling
Cutter mark removal and polishing on inner diameter

Tool XEBEC Brush ™ Crosshole

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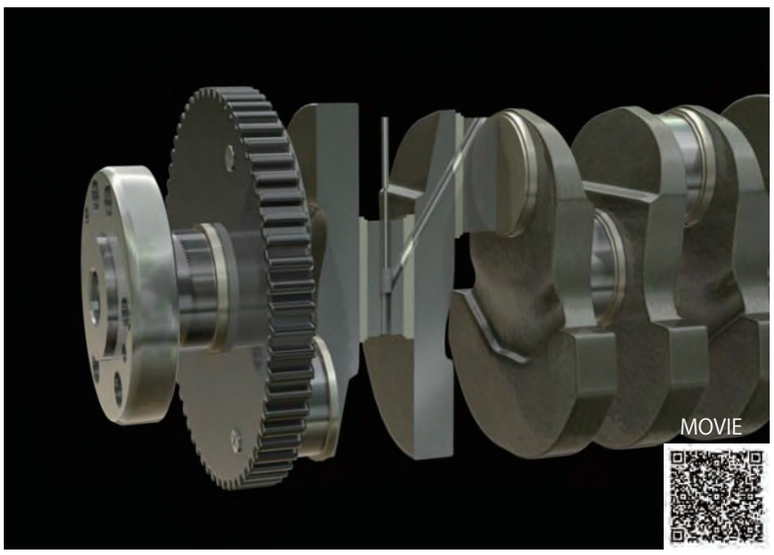
Applications

Crankshaft (Cross hole)



Workpiece information

Industry	Automotive
Part name	Crankshaft (Cross hole)
Material type	S48C
Cutting process	Drilling

Processing conditions

Tool	XEBEC Stone Flexible Shaft (CH-PM-5R-C01)
Processing detail	Cross-hole deburring after drilling process
Spindle Speed (min $^{-1}$)	1,350
Table Feed (mm/min)	—
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

Tool: Cutter

Problem: Burrs left by manual deburring. Caused low production rate.

After

Tool: XEBEC Stone Flexible Shaft (CH-PM-5R-C01)

Result: By introduction of automated deburring with machining center, stable edge quality and cost reduction realized.

Hole deburring

Tool XEBEC Stone ™ Flexible Shaft

Flexible shaft allows soft contact with a workpiece and suppresses subtle vibration when being processed.

Ideal for deburring the front and back of drilled holes both.

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XEBEC® BEAUTIFUL DEBURRING

Applications

Shaft parts

Workpiece information

Industry	Automotive
Part name	Shaft parts
Material type	SCM
Cutting process	Threading

Processing conditions

Tool	XEBEC Brush for Surface (A21-CB25M)
Processing detail	Deburring (contouring) unfinished parts of female screw with inner diameter Φ24.
Spindle Speed (min $^{-1}$)	3,000
Table Feed (mm/min)	—

Before

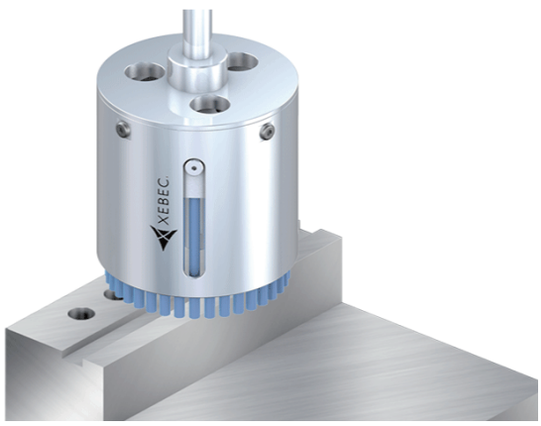
Tool — Nylon / wire brush

Problem — Burrs remained by nylon/wire brushes due to insufficient grinding force and manual deburring was required later.

After

Tool — XEBEC Brush for Surface (A21-CB25M)

Result — Automated deburring realized with machining center by contouring the cut-out portion of female bolts with brush after processing the tap. Also, surface quality stabilized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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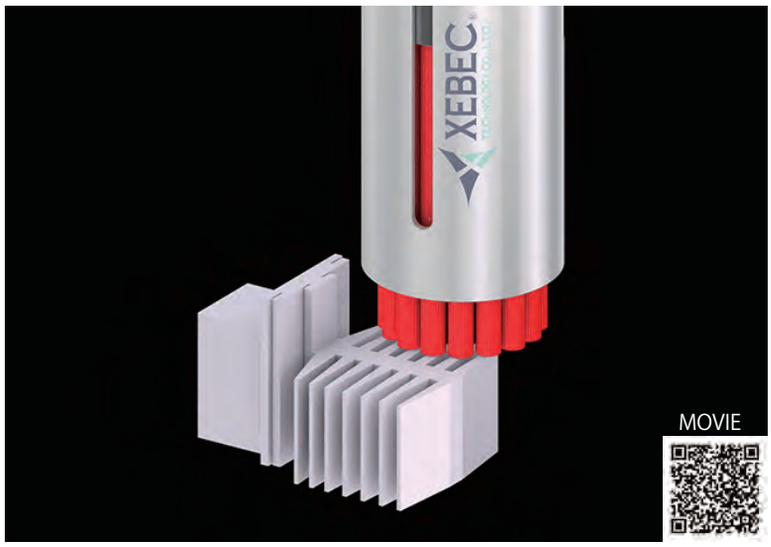
XEBEC® BEAUTIFUL DEBURRING

Applications

Cooling fin



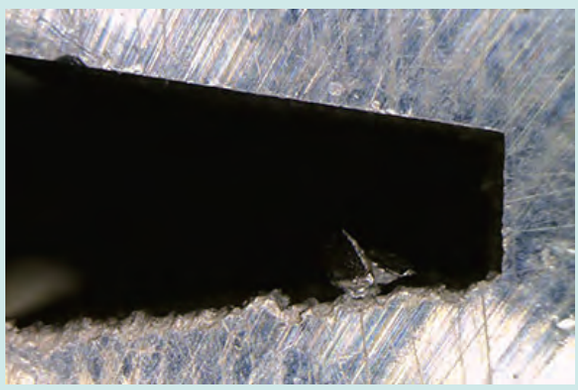
Workpiece information

Industry	Automotive
Part name	Cooling fin
Material type	Aluminum alloy
Cutting process	Others

Processing conditions

Tool	XEBEC Brush for Surface (A11-CB40M)
Processing detail	Deburring the edge after cutting process
Spindle Speed (min $^{-1}$)	3,000
Table Feed (mm/min)	800
Depth of cut (mm)	1

Before



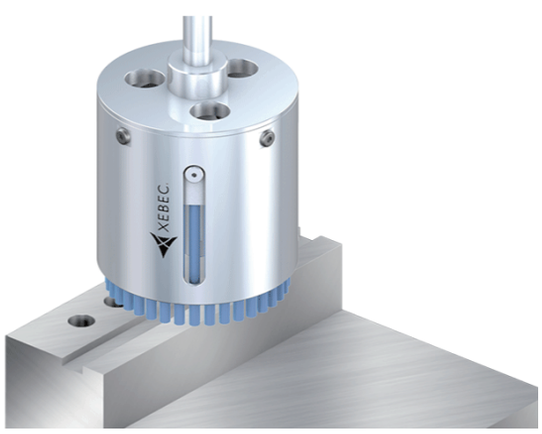
Tool: Wire brush

Problem: After deburring process, burrs remained due to complicated shape of workpiece.

After

Tool: XEBEC Brush Surface (A11-CB40M)

Result: No burrs left and finish quality improved.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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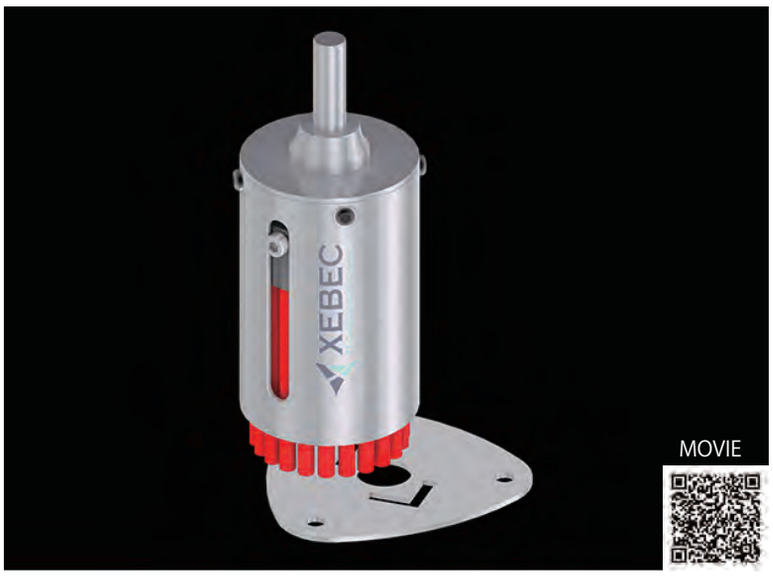
XEBEC® BEAUTIFUL DEBURRING

Applications

Plate



Workpiece information

Industry	Automotive
Part name	Plate
Material type	SPH440
Cutting process	Others

Processing conditions

Tool	XEBEC Brush Surface (A11-CB60M)
Processing detail	Deburring the external circumference edge and (4) bores
Spindle Speed (min $^{-1}$)	900
Depth of cut (mm)	1
Machining time (sec)	3

Before

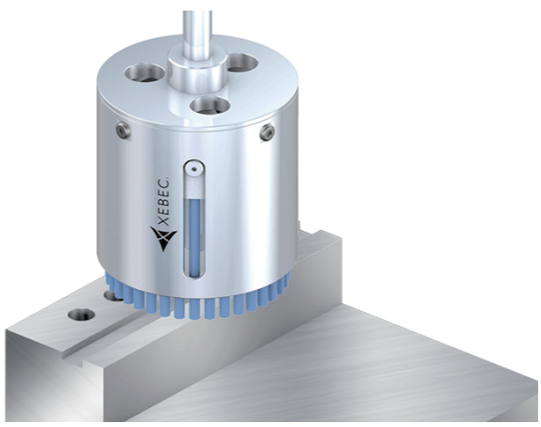
Tool — Plastic brush

Problem — The brush edge deformed. The inner diameter of cross hole H7 could not be maintained. Mass production machining was not possible.

After

Tool — XEBEC Brush for Surface (A11-CB60M)

Result — Deburring with maintaining the inner edge profile of cross hole H7 without deformation realized. Quality requirement achieved. Also, tool life 65000 pcs/brush realized.



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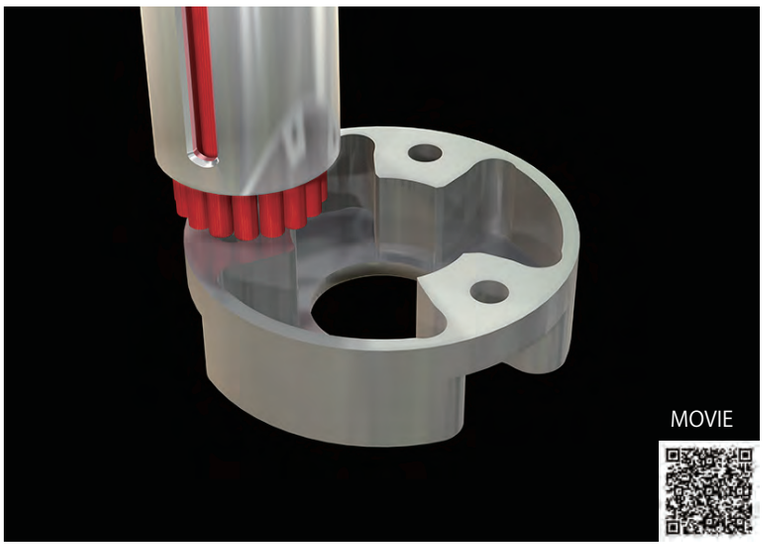
XEBEC® BEAUTIFUL DEBURRING

Applications

VCT housing



Workpiece information

Industry	Automotive
Part name	VCT housing
Material type	Sintered metal
Cutting process	Front cutter processing

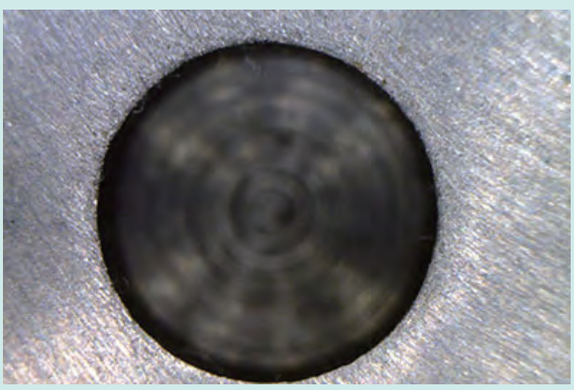
Processing conditions

Tool	XEBEC Brush for Surface (A11-CB40M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	500
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.5
Machining time (sec)	—

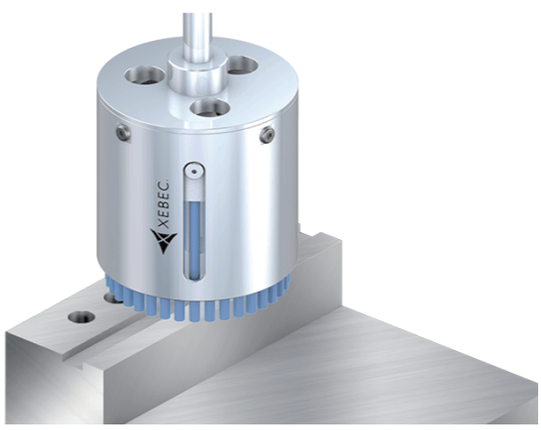
Before

Tool	Abrasive-impregnated nylon brush
Problem	Deformation of nylon brush shape occurred in mass production process. It caused unstable quality due to insufficient deburring performance and burr remaining.

After



Tool	XEBEC Brush for Surface (A11-CB40M)
Result	No deformation of brush shape in mass production process. Stable cutting parameters with no burrs realized.



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Cutter mark removal and polishing on surface

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XEBEC® BEAUTIFUL DEBURRING

Applications

Ring-shaped internal gear

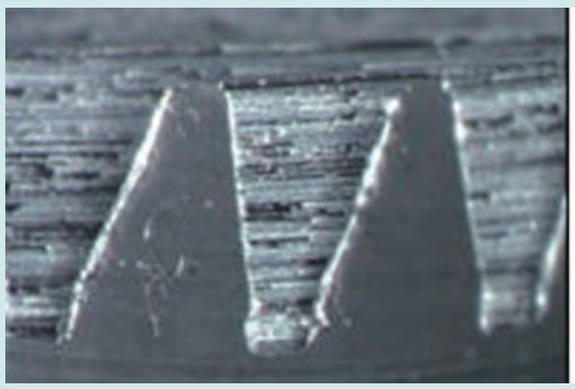
Workpiece information

Industry	Automotive
Part name	Ring-shaped internal gear
Material type	S45C
Cutting process	Gear cutting

Processing conditions

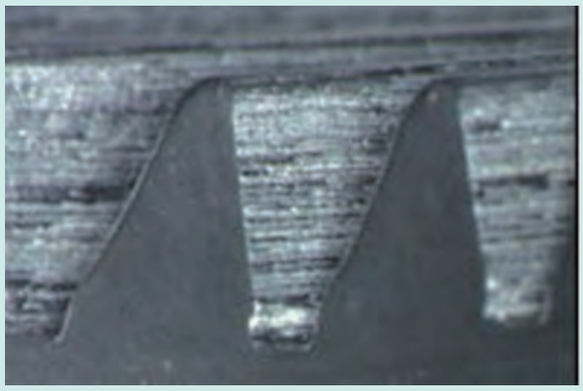
Tool	XEBEC Brush Surface (A31-CB40M)
Processing detail	Deburring the gear end face after gear cutting process
Spindle Speed (min $^{-1}$)	2,000
Depth of cut (mm)	0.5

Before

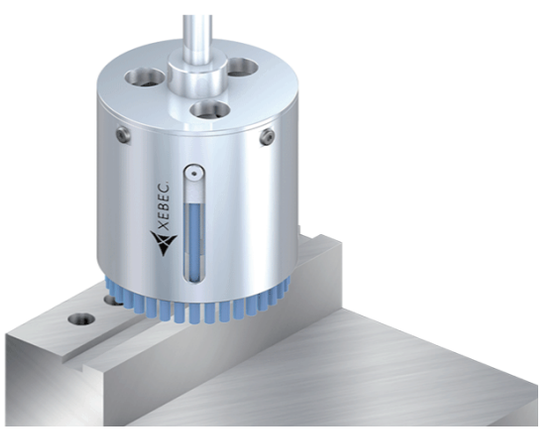


Tool	File
Problem	Metal filing handwork caused unstable quality. Complex shape of workpiece caused long lead time of deburring and high labour cost.

After



Tool	XEBEC Brush for Surface (A31-CB40M)
Result	Fully automated deburring introduced. Stable quality with shorter processing time as well as cost reduction realized.



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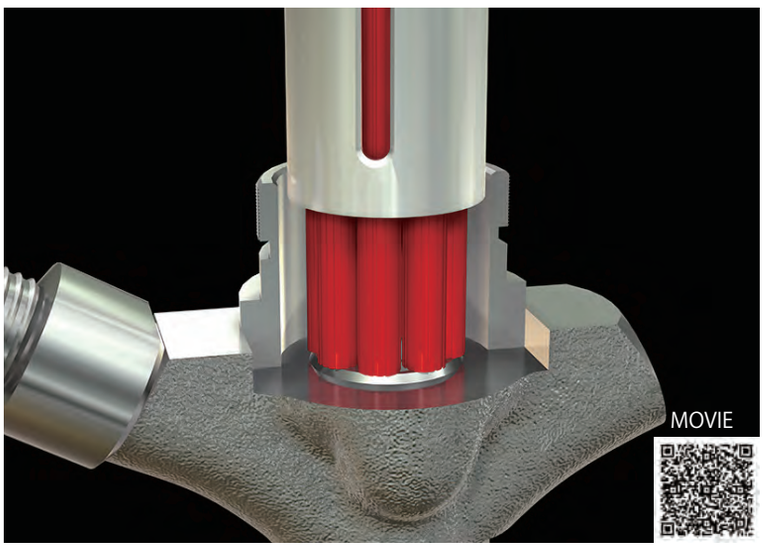
XEBEC® BEAUTIFUL DEBURRING

Applications

Injector body (Nozzles)



Workpiece information

Industry	Automotive
Part name	Injector body (Nozzles)
Material type	SCM
Cutting process	Drilling

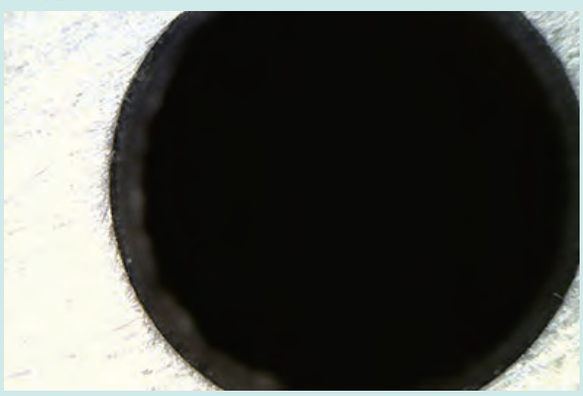
Processing conditions

Tool	XEBEC Brush Surface (A11-CB15M) XEBEC Floating Holder (FH-ST12)
Processing detail	Deburring the edge face after drilling process
Spindle Speed (min $^{-1}$)	2000
Depth of cut (mm)	4

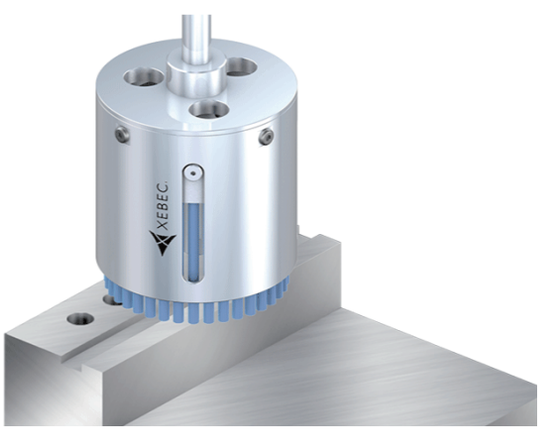
Before

Tool	Abrasive-impregnated nylon brush
Problem	Burrs remained and full inspection required, resulting in high labor cost.

After



Tool	XEBEC Brush for Surface (A11-CB15M), XEBEC Floating Holder (FH-ST12)
Result	No burr remaining realized by automated deburring with machining center. Besides, this enabled introduction of random sampling instead of full inspection and cost reduction achieved. Surface roughness of processed area improved.



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Applications

Injector body (Shoulder)

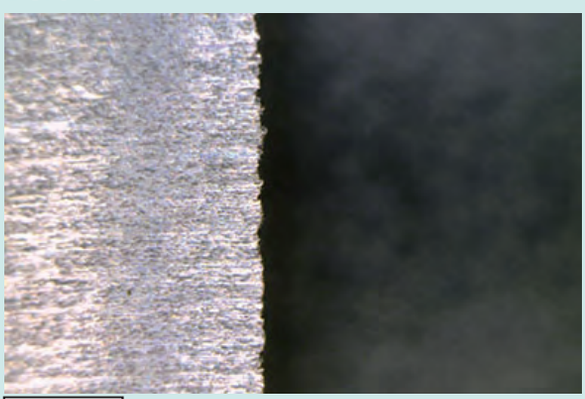
Workpiece information

Industry	Automotive
Part name	Injector body (Shoulder)
Material type	SCM
Cutting process	End milling processing

Processing conditions

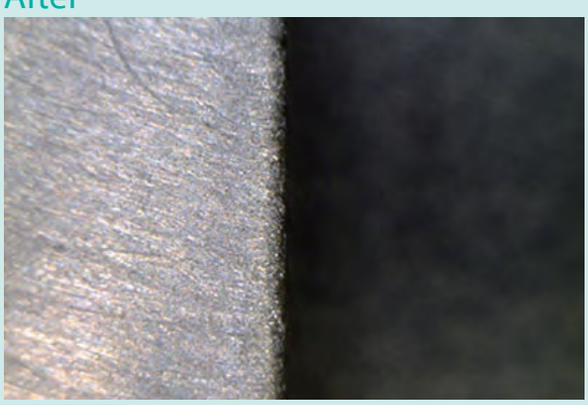
Tool	XEBEC Brush Surface (A21-CB06M) XEBEC Floating Holder (FH-ST12)
Processing detail	Deburring of boundary line on the casting surface after end milling
Spindle Speed (min $^{-1}$)	5000
Depth of cut (mm)	4

Before

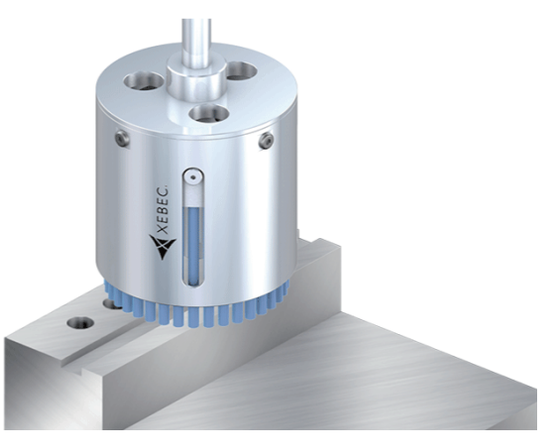


Tool	Abrasive-impregnated nylon brush
Problem	Burrs remained and full inspection required, resulting in high labour cost.

After



Tool	XEBEC Brush for Surface (A21-CB06M) XEBEC Floating Holder (FH-ST12)
Result	Complete removal of burrs achieved by CNC deburring with machining center. Besides, this enabled introduction of random sampling instead of full inspection and cost reduction achieved. Besides, surface roughness of processed area improved.



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Applications

Control box

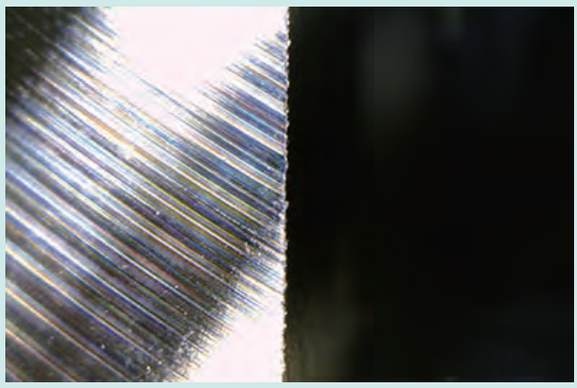
Workpiece information

Industry	Automotive
Part name	Control box
Material type	Aluminum alloy
Cutting process	Front cutter processing

Processing conditions

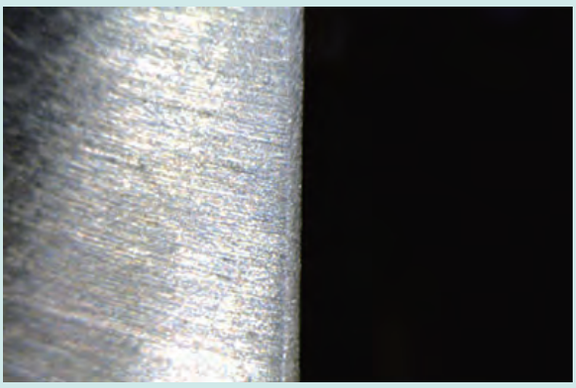
Tool	XEBEC Brush for Surface (A11-CB25M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	2,500
Depth of cut (mm)	1
Machining time (sec)	—

Before

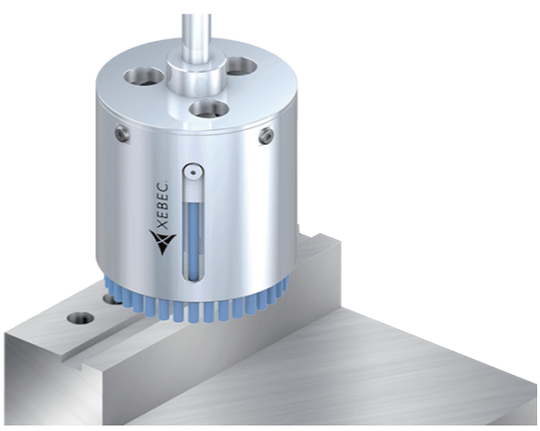


Tool	Wire brush
Problem	Burr remains by wire brush due to low grinding power and additional manual deburring required.

After



Tool	XEBEC Brush for Surface (A11-CB25M)
Result	No burrs left. Productivity improved drastically.



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Applications

Connecting rod (edge face)

Workpiece information

Industry	Automotive
Part name	Connecting rod (edge face)
Material type	S45C
Cutting process	Front cutter processing

Processing conditions

Tool	XEBEC Brush for Surface (A31-CB25M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	2,500
Depth of cut (mm)	1
Machining time (sec)	—

Before

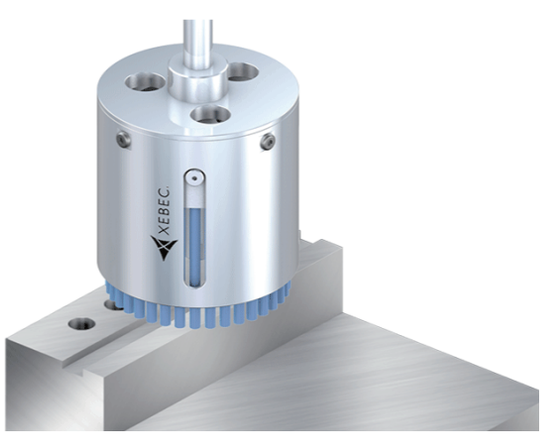
Tool: Wire brush

Problem: Burrs remained. Brushes deformed and caused the quality control problem in mass production.

After

Tool: XEBEC Brush for Surface (A31-CB25M)

Result: Automated deburring with stable quality during production realized.



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XEBEC® BEAUTIFUL DEBURRING

Applications

Ring plate

Workpiece information

Industry	Automotive
Part name	Ring plate
Material type	SPH
Cutting process	Others

Processing conditions

Tool	XEBEC Brush for Surface (A32-CB25M)
Processing detail	Deburring outer edge after pressing
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	—
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

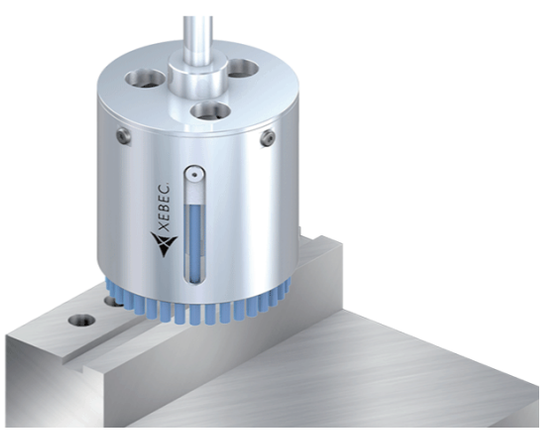
Tool: Abrasives-impregnated nylon brush

Problem: Nylon brushes did not have enough grinding power. On the other hand, grindstones did not fit well to workpieces and burr remained. Therefore, deburring could not be automated.

After

Tool: XEBEC Brush Surface (A32-CB25M)

Result: No burrs left. Full automation process realized.



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Applications

Common Rail

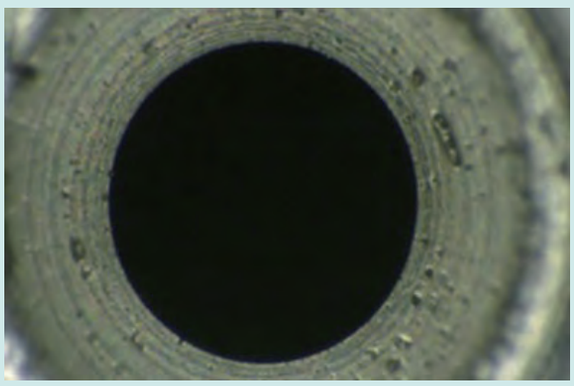
Workpiece information

Industry	Automotive
Part name	Common rail
Material type	S48C
Cutting process	Grinding

Processing conditions

Tool	XEBEC Brush Surface (A21-CB25M) XEBEC Floating Holder (FH-ST12)
Processing detail	Deburring the seal surface after grinding process
Spindle Speed (min $^{-1}$)	3,000
Depth of cut (mm)	4

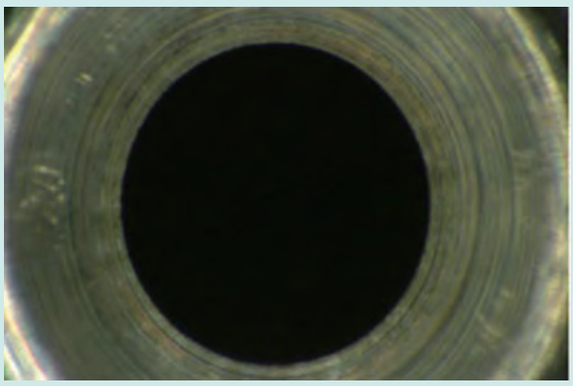
Before



Tool: Sandpaper

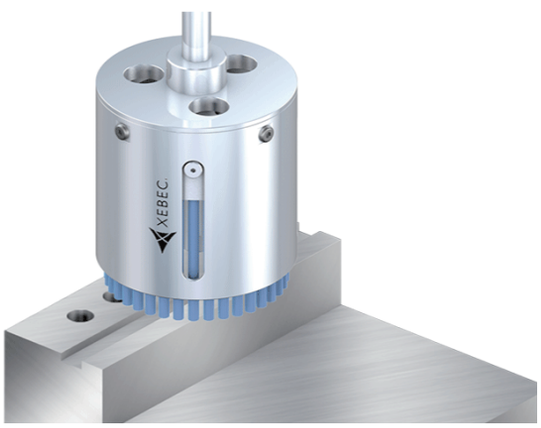
Problem: Low production rate due to unstable surface roughness. Short tool life of sandpaper caused a cost problem.

After



Tool: XEBEC Brush for Surface (A21-CB25M)
XEBEC Floating Holder (FH-ST12)

Result: Required surface roughness realized in shorter cycle time. Reduction of labor costs corresponding to 20 hours of manual deburring work with sandpaper has been achieved.



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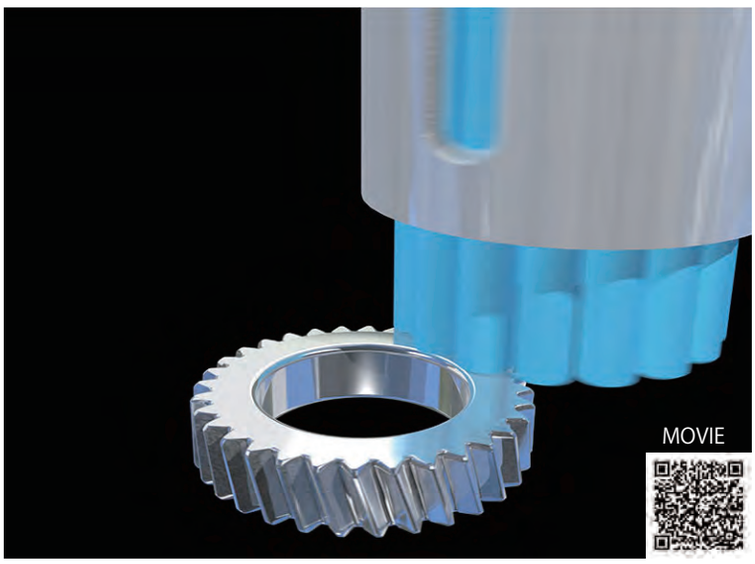
Applications

Pinion gear



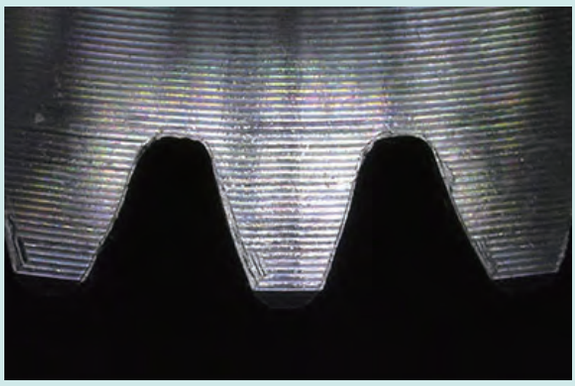
Workpiece information

Industry	Automotive
Part name	Pinion gear
Material type	S45C
Cutting process	Gear cutting

Processing conditions

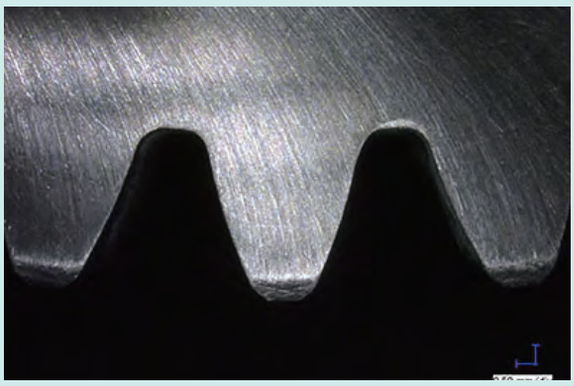
Tool	XEBEC Brush Surface (A31-CB40M) XEBEC Floating Holder (FH-ST12)
Processing detail	Deburring the gear edge face after hobbing process
Spindle Speed (min $^{-1}$)	900
Table Feed (mm/min)	2,400
Depth of cut (mm)	3

Before

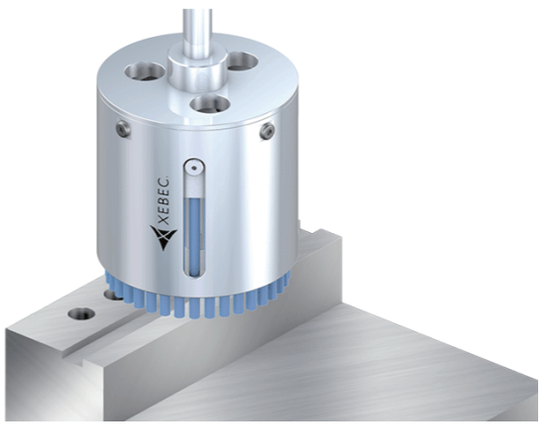


Tool	File
Problem	It took time for manual deburring and edge quality was not stable.

After



Tool	XEBEC Brush for Surface (A31-CB40M) XEBEC Floating Holder (FH-ST12)
Result	Deburring is automated. Consistent finish in a short time.



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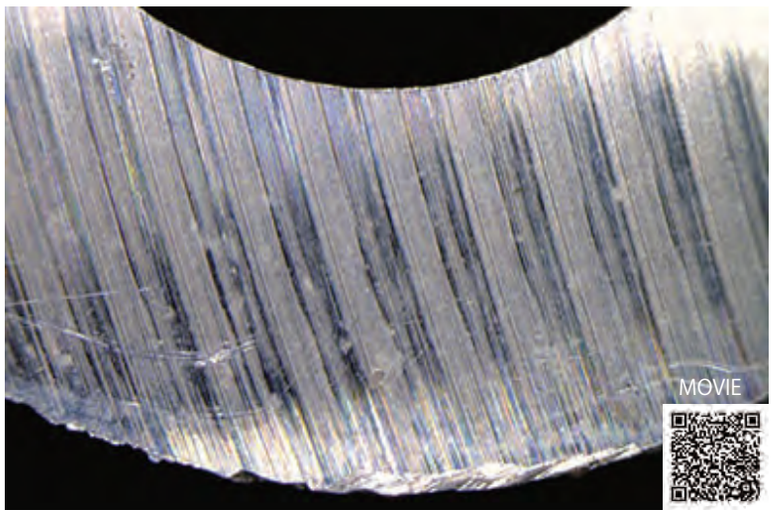
Applications

Oil pan



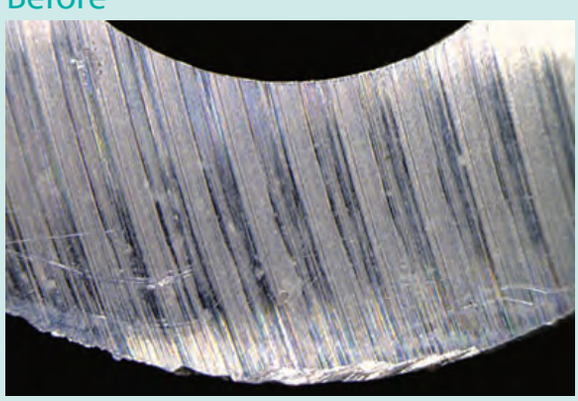
Workpiece information

Industry	Automotive
Part name	Oil pan
Material type	Alminium alloy
Cutting process	Front cutter processing

Processing conditions

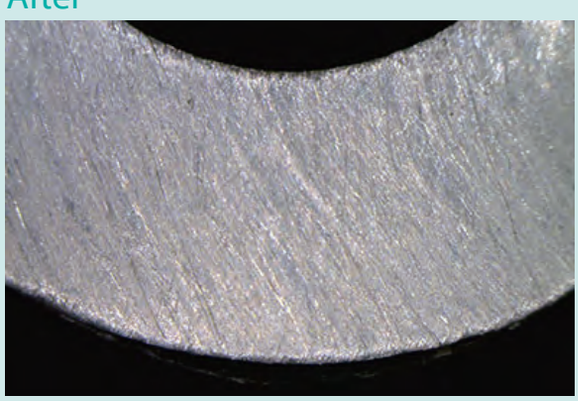
Tool	XEBEC Brush for Surface (A31-CB25M)
Processing detail	Deburring of the matching surface after face milling process.
Spindle Speed (min $^{-1}$)	2,000
Table Feed (mm/min)	3,000
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

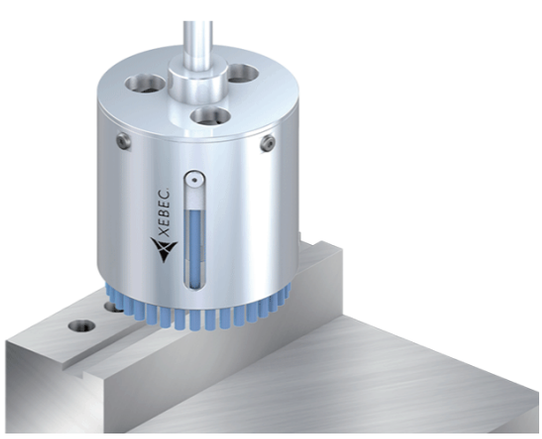


Tool	Wire brush
Problem	Scratches are left by deburring with wire brushes.

After



Tool	XEBEC Brush for Surface (A31-CB25M)
Result	Full automation deburring with machining center realized with improved surface quality.



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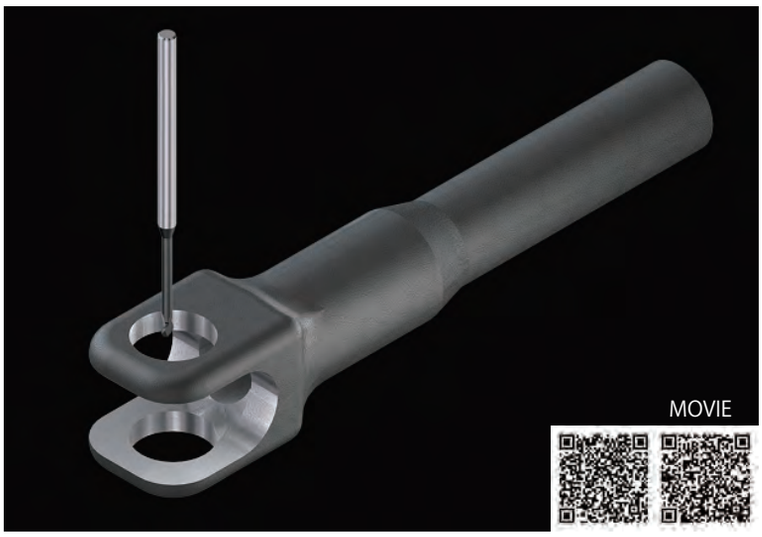
Applications

Yoke



Workpiece information

Industry	Automotive
Part name	Yoke
Material type	SCM
Cutting process	Drilling

Processing conditions

Tool	XEBEC Back Burr Cutter and Path (XC-58-A)
Processing detail	Deburring the back burr after drilling process
Spindle Speed (min $^{-1}$)	6,000
Depth of cut (mm)	900

Before

Tool — Back burr deburring tool (Blade type)

Problem — When inserting the tool, scratch occurred by tool contact.

After

Tool — XEBEC Back Burr Cutter and Path (XC-58-A)

Result — By pinpoint deburring for the edge, no scratch with shorter cycle time realized.

Deburring after drilling

Tool XEBEC Back Burr Cutter and Path ™

Perfect for deburring the front and back of drilled holes both

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XEBEC® BEAUTIFUL DEBURRING

Applications

Exhaust manifold

Workpiece information

Industry	Automotive
Part name	Exhaust manifold
Material type	AC4C
Cutting process	Front cutter processing

Processing conditions

Tool	XEBEC Brush for Surface (A21-CB60M)
Processing detail	Deburring of the matching surface after face milling process.
Spindle Speed (min $^{-1}$)	1,000
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.5

Before

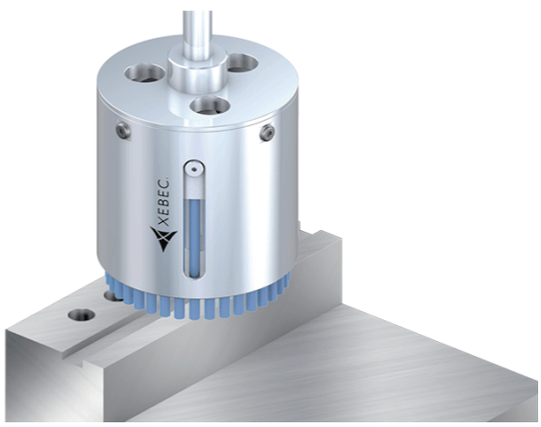
Tool: File

Problem: It took time for manual deburring. This caused unstable quality.

After

Tool: XEBEC Brush for Surface (A21-CB60M)

Result: Automated deburring with stable quality in a shorter cycle time realized.



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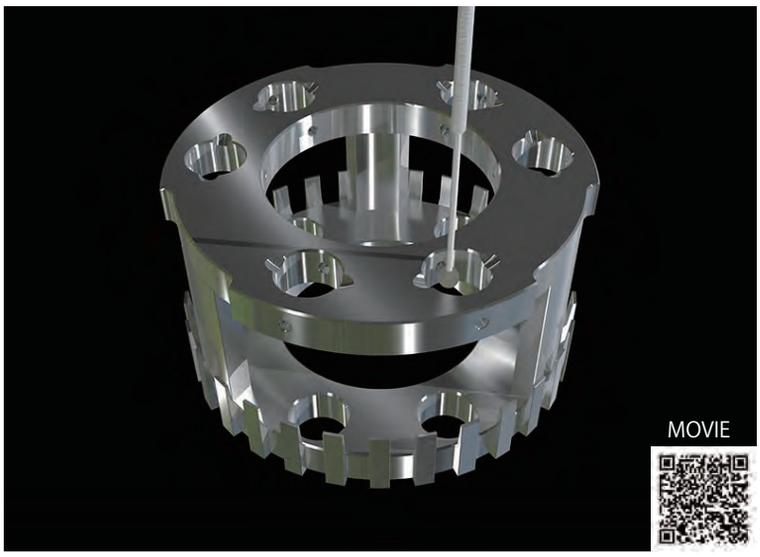
Applications

Carrier



Workpiece information

Industry	Automotive
Part name	Carrier
Material type	Press
Cutting process	Drilling

Processing conditions

Tool	XEBEC Stone Flexible Shaft (CH-PM6B)
Processing detail	Cross hole deburring after drilling process
Spindle Speed (min $^{-1}$)	9,000
Table Feed (mm/min)	—
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

Tool: Rotary bar and rotating tool

Problem: Rotary bar used with rotary tool is used for processing. Edge shape damaged and secondary burr (back burr) generated.

After

Tool: XEBEC Stone Flexible Shaft (CH-PM6B)

Result: Stable edge shape realized without generating the secondary burr.

Hole deburring

Tool XEBEC Stone ™ Flexible Shaft

Flexible shaft allows soft contact with a workpiece and suppresses subtle vibration when being processed.

Ideal for deburring the front and back of a drilled hole both.

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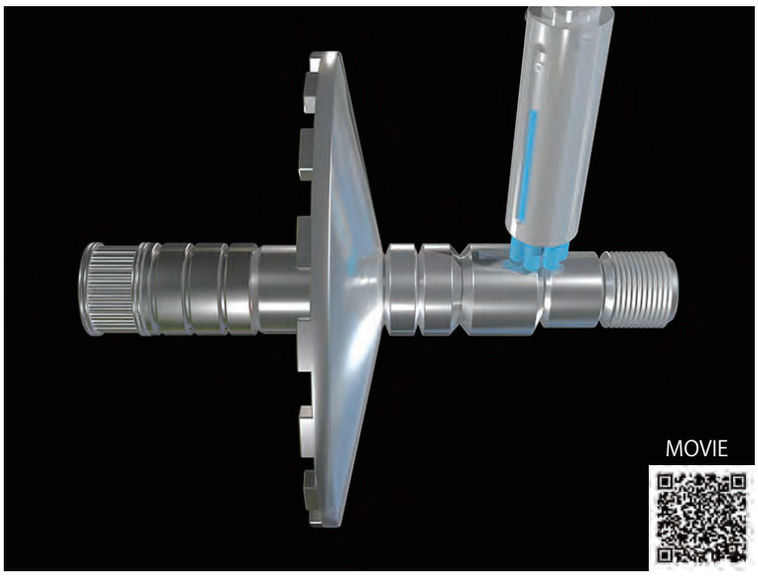
Applications

Pulley



Workpiece information

Industry	Automotvie
Part name	Pulley
Material type	Scr420
Cutting process	Side cutter processing

Processing conditions

Tool	XEBEC Brush Surface (A31-CB25M)
Processing detail	Deburring the outer edge after side cutter
Spindle Speed (min $^{-1}$)	1,800
Table Feed (mm/min)	1
Depth of cut (mm)	1,800
Machining time (sec)	—

Before

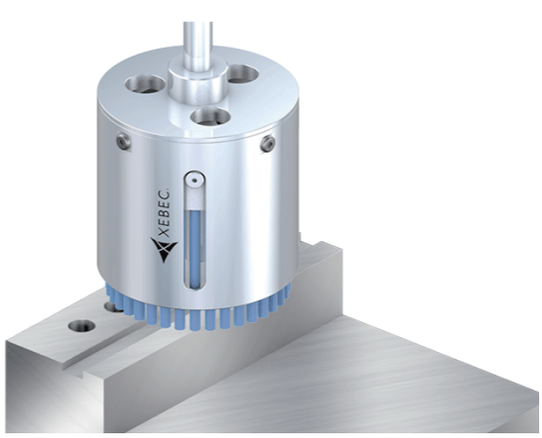
Tool: File

Problem: It took long time for manual deburring.

After

Tool: XEBEC Brush Surface (A31-CB25M)

Result: Automated deburring with stable quality in a shorter cycle time realized.



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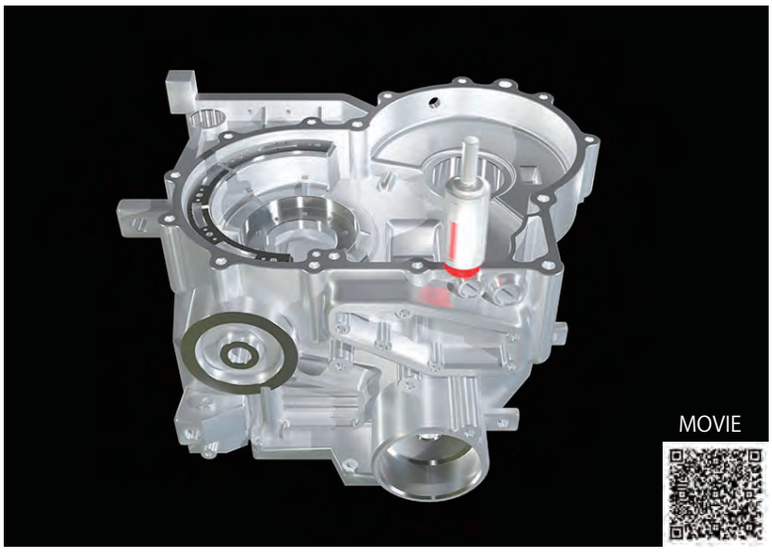
XEBEC® BEAUTIFUL DEBURRING

Applications

Transmission case（Matching surface）



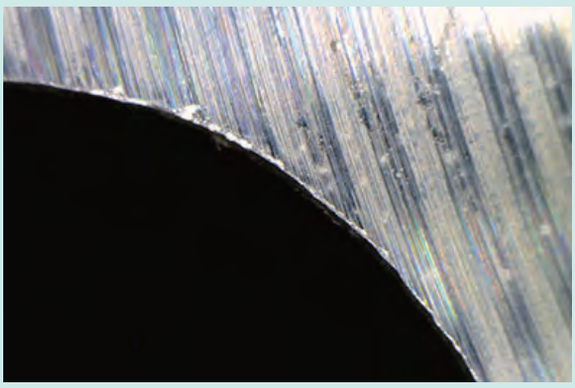
Workpiece information

Industry	Automotvie
Part name	Transmission (Matching surface)
Material type	ADC12
Cutting process	Front cutter processing

Processing conditions

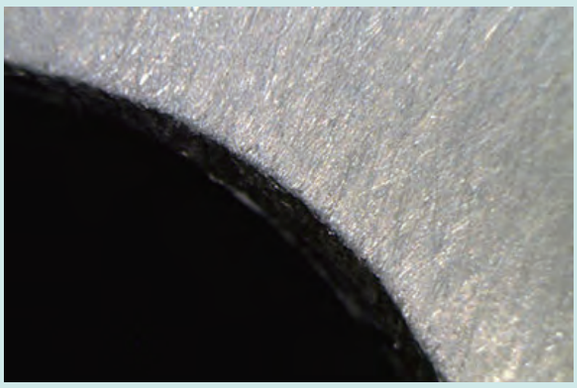
Tool	XEBEC Brush Surface (A11-CB40M)
Processing detail	Deburring of the matching surface after face milling process
Spindle Speed (min $^{-1}$)	2,160
Table Feed (mm/min)	7,000
Depth of cut (mm)	0.5

Before

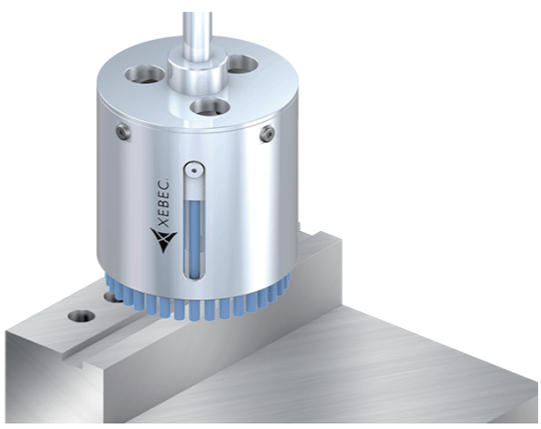


Tool	Abrasive-impregnated nylon brush
Problem	Burrs left due to low grinding power. Additional manual deburring processing was required.

After



Tool	XEBEC Brush Surface (A11-CB40M)
Result	By the introduction of XEBEC Brush, deburring in a shorter time realized.



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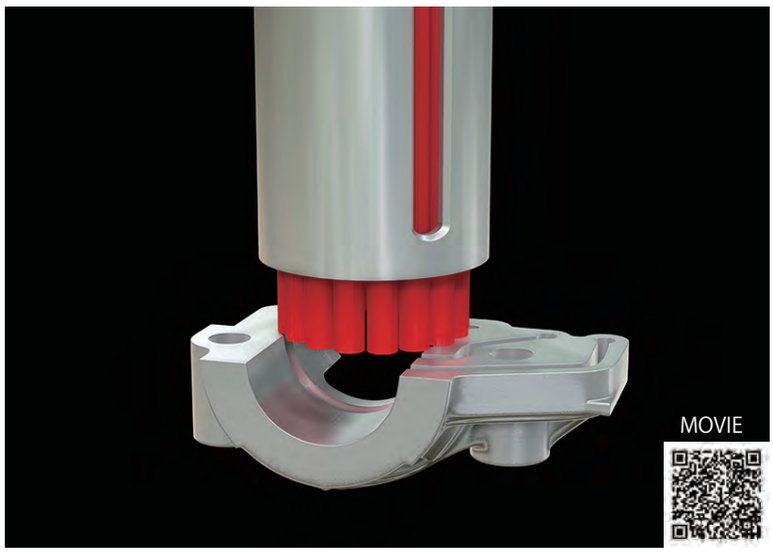
Applications

Cam cap



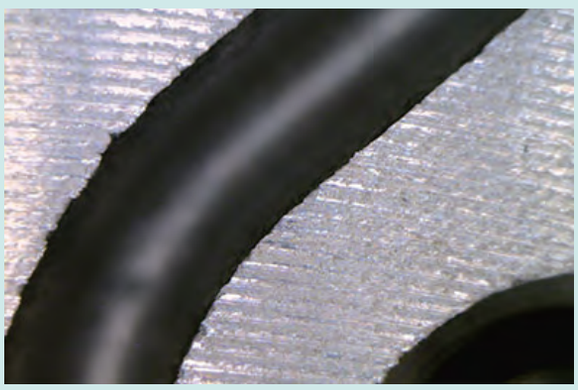
Workpiece information

Industry	Automotvie
Part name	Cam cap
Material type	ADC12
Cutting process	Front cutter processing

Processing conditions

Tool	XEBEC Brush for surface (A11-CB40M)
Processing detail	Deburring the matching surface after face milling process.
Spindle Speed (min $^{-1}$)	1,350
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.5

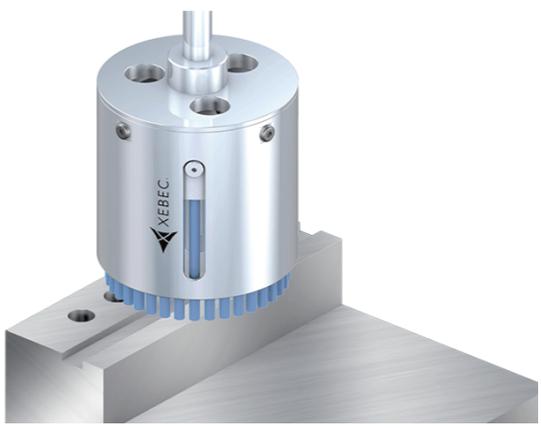
Before



Tool	Abrasive-impregnated nylon brush
Problem	Burrs remained due to insufficient grinding force of nylon brushes and additional manual deburring process required.

After

Tool	XEBEC Brush for Surface (A11-CB40M)
Result	Stable and efficient deburring realized by fully automated deburring with machining centers.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

Ideal for deburring, cutter mark removal and polishing on surface

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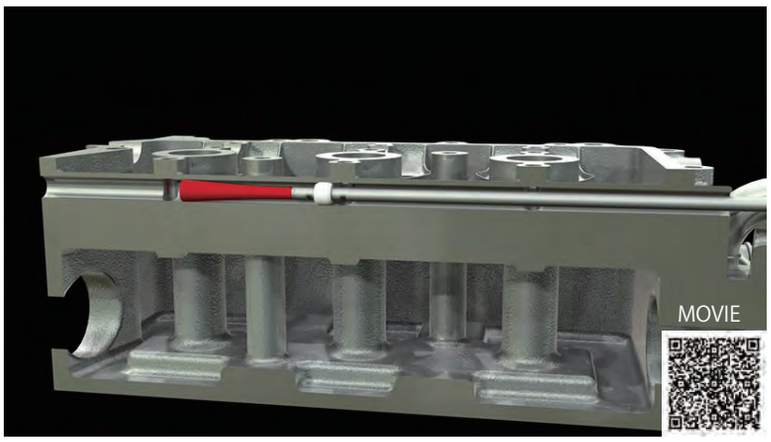
XEBEC® BEAUTIFUL DEBURRING

Applications

Cylinder head （Oil gallery）



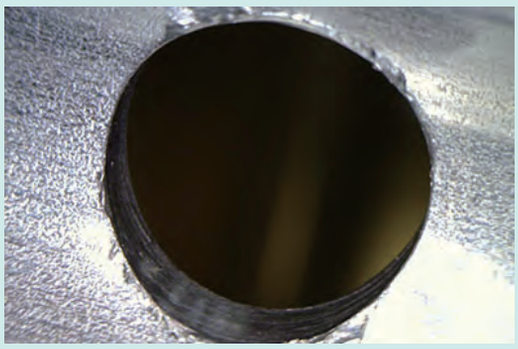
Workpiece information

Industry	Automotvie
Part name	Cylinder head （Oil gallery ）
Material type	ADC12
Cutting process	Drilling

Processing conditions

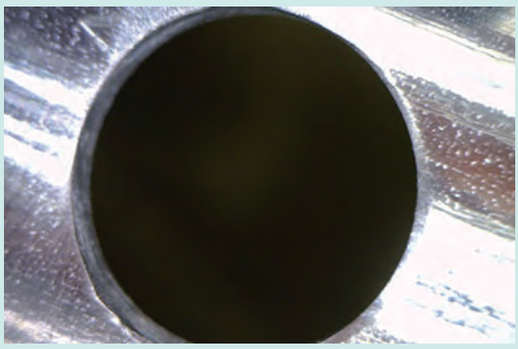
Tool	XEBEC Brush Crosshole Extra-Long (CH-A12-5F)
Processing detail	Cross hole deburring and internal polishing after drillng process
Spindle Speed (min $^{-1}$)	7,200
Table Feed (mm/min)	2,000
Depth of cut (mm)	—

Before



Tool	Abrasive-impregnated nylon brush
Problem	Burrs were not removed completely. This caused the problem of quality inspection.

After



Tool	XEBEC Brush Cross hole Extra-Long (CH-A12-5F)
Result	Deburring and polishing quality stabilized.

Deburring after drilling
Cutter mark removal and polishing on inner diameter

Tool　XEBEC Brush ™ Crosshole Extra-Long

Suitable for deburring, polishing and cutter mark removal of inner diameter and counterbored part exceeding 150 mm in depth

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XEBEC® BEAUTIFUL DEBURRING

Applications

Output Shaft (Oil hole)

Workpiece information

Industry	Automotive
Part name	Output Shaft (Oil hole)
Material type	SCM
Cutting process	Drilling

Processing conditions

Tool	XEBEC Back Burr Cutter and Path (XC-28-A +α)
Processing detail	Back deburring after drilling
Spindle Speed (min^{-1})	12,500
Table Feed (mm/min)	1,000
Depth of cut (mm)	—
Machining time (sec)	—

Before

Tool — Back deburring tools (cotter pin type)

Problem — Poor deburring performances such as remained burrs, secondary burrs and uneven edges.

After

Tool — XEBEC Back Burr Cutter and Path (XC-28-A + special path)

Result — Uniform deburring amount without secondary burrs realized by high quality CNC deburring.

Deburring after drilling

Tool　XEBEC Back Burr Cutter and Path™

Perfect for deburring both front and back of a drilled hole

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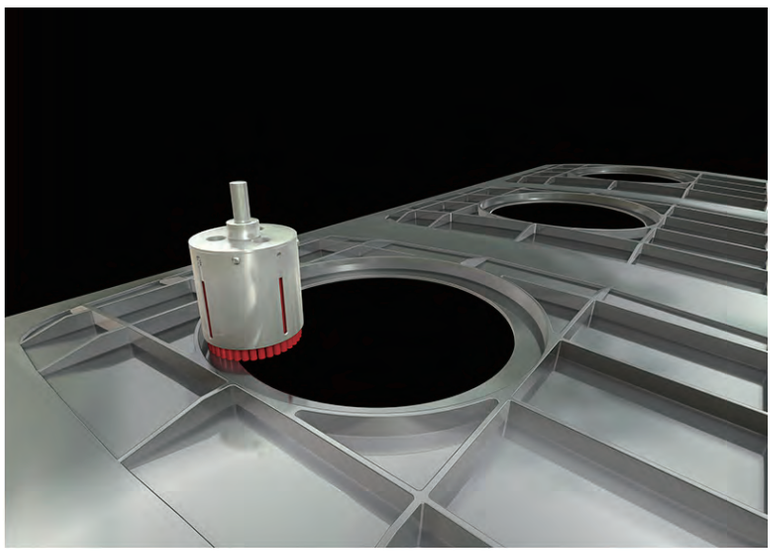
XEBEC® BEAUTIFUL DEBURRING

Aerospace

Applications

Aircraft body



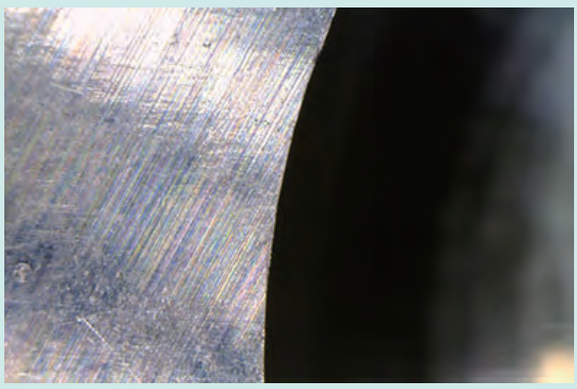
Workpiece information

Industry	Aerospace
Part name	Aircraft body
Material type	Aluminum alloy
Cutting process	Front cutter processing

Processing conditions

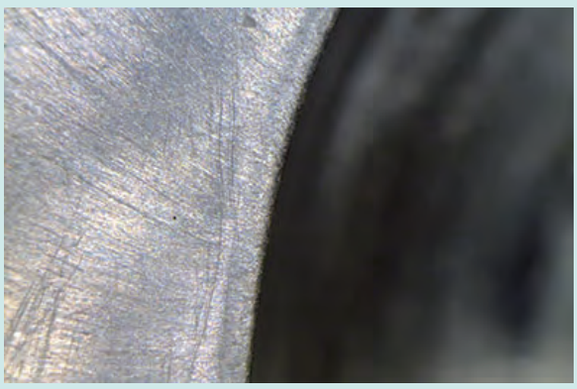
Tool	XEBEC Brush Surface (A11-CB100M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	960
Table Feed (mm/min)	500
Depth of cut (mm)	0.3
Machining time (sec)	—

Before

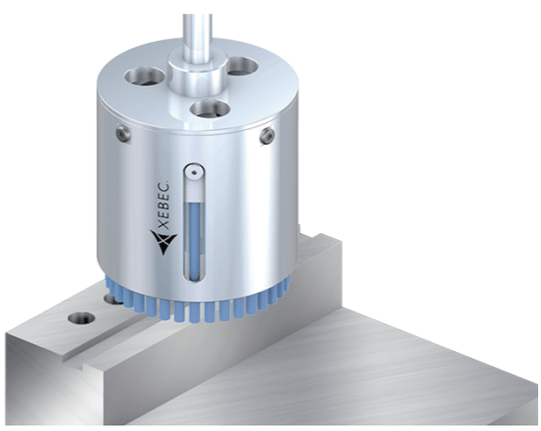


Tool	Belt sander
Problem	It took time for deburring due to the large workpiece.

After



Tool	XEBEC Brush Surface (A11-CB100M)
Result	Deburring is fully automated. Consistent finish and cut-down of machining time achieved.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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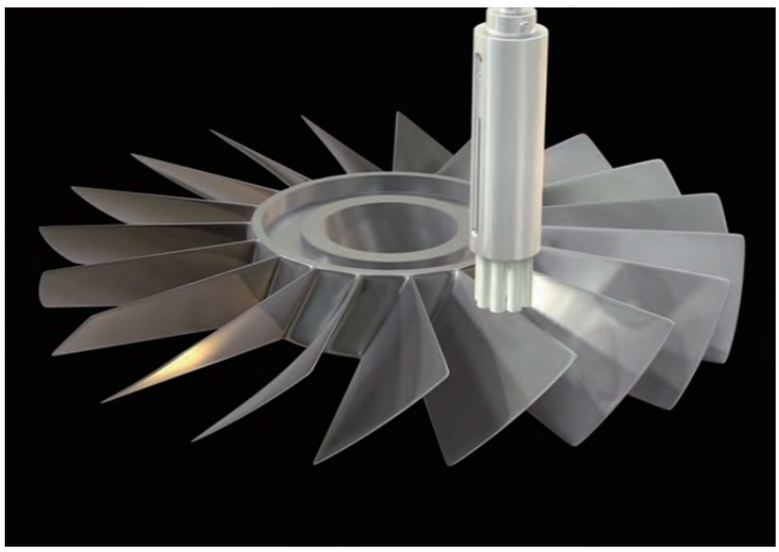
XEBEC® BEAUTIFUL DEBURRING

Applications

Blisk



Workpiece information

Industry	Aerospace
Part name	Blisk
Material type	Inconel
Cutting process	Ball end mill processing

Processing conditions

Tool	XEBEC Brush Surface (A21-CB25M)
Processing detail	Deburring after ball-end milling process
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	2,400
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

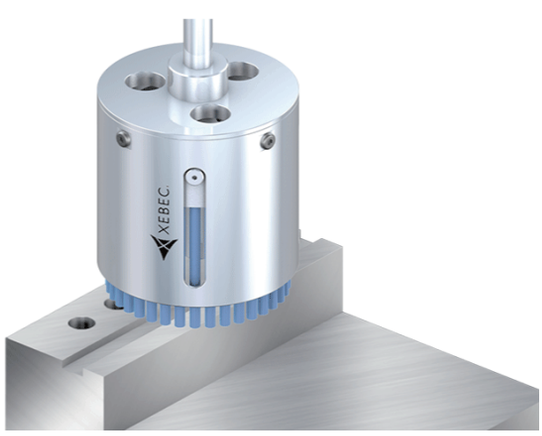
Tool: Grindstone

Problem: It took time for deburring due to the complicated design of workpiece. Resulted in unstable edge quality.

After

Tool: XEBEC Brush Surface (A21-CB25M)

Result: By the introduction of automated deburring, 1 operator can operate the multiple machining centers.



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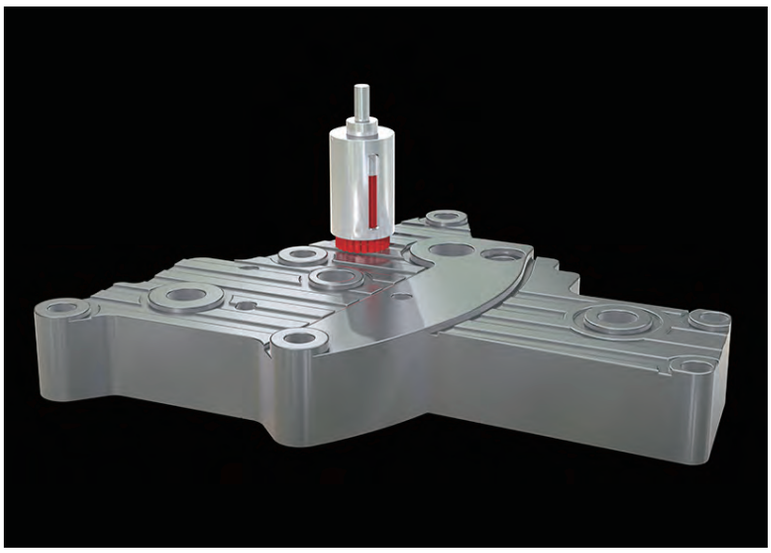
XEBEC® BEAUTIFUL DEBURRING

Applications

Landing gear parts



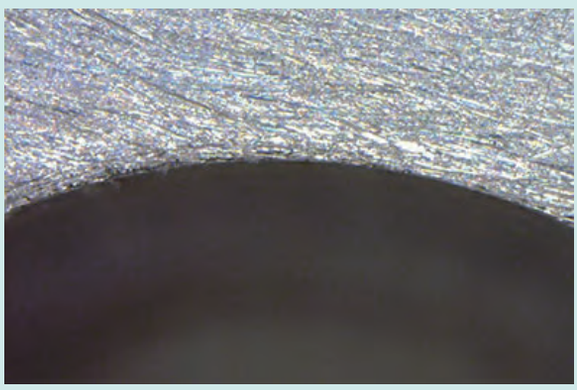
Workpiece information

Industry	Aerospace
Part name	Landing gear parts
Material type	Aluminum
Cutting process	Front cutter processing

Processing conditions

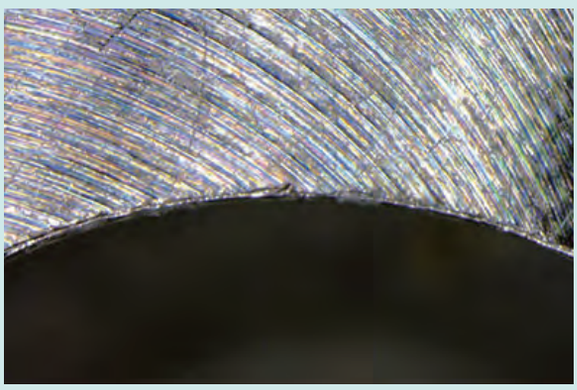
Tool	XEBEC Brush Surface (A11-CB100M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	3,000
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.7
Machining time (sec)	—

Before

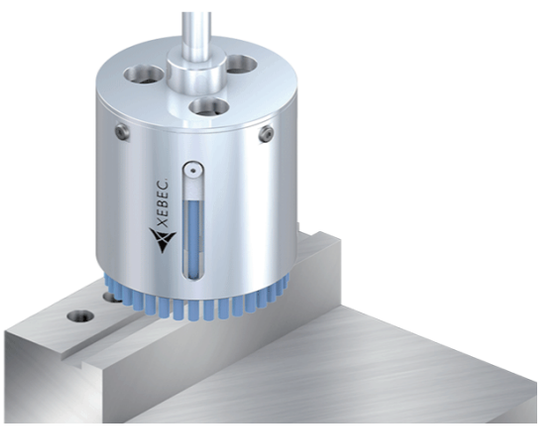


Tool	File
Problem	Manual deburring caused unstable quality and long processing time required.

After



Tool	XEBEC Brush Surface (A11-CB40M)
Result	Deburring is fully automated and consistent finish achieved.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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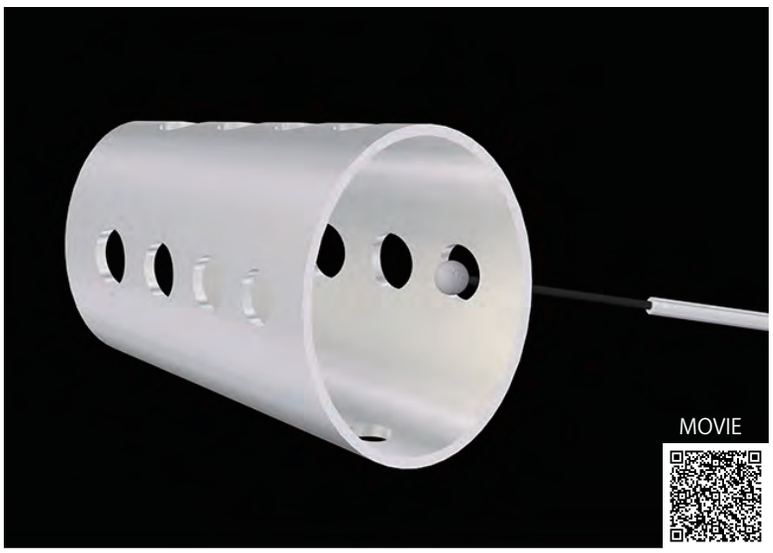
XEBEC® BEAUTIFUL DEBURRING

Applications

Pipe parts for aircrafts (Cross hole)



Workpiece information

Industry	Aerospace
Part name	Pipe parts for aircrafts (Cross hole)
Material type	SUS
Cutting process	Drilling

Processing conditions

Tool	XEBEC Stone Flexible Shaft Type (CH-PM-6B)
Processing detail	Cross hole deburring (back burr) after drilling process
Spindle Speed (min $^{-1}$)	2,000
Table Feed (mm/min)	—
Depth of cut (mm)	—
Machining time (sec)	30sec/hole

Before

Tool — Rubber grindstone in the rotating tool

Problem — Finish quality varied from the skill of workers. It took around 40 minutes to deburr 16 holes (150 seconds/hole).

After

Tool — XEBEC Stone Flexible Shaft Type (CH-PM-6B)

Result — Insert the spherical grinding stone with the cross hole and contour the edge while pulling the tool lightly. Stable quality with shorter cycle time realized.

Hole deburring

Tool XEBEC Stone ™ Flexible Shaft

Flexible shaft enables soft contact with a workpiece and suppresses chattering during process.

Ideal for deburring both front and back of drilled holes.

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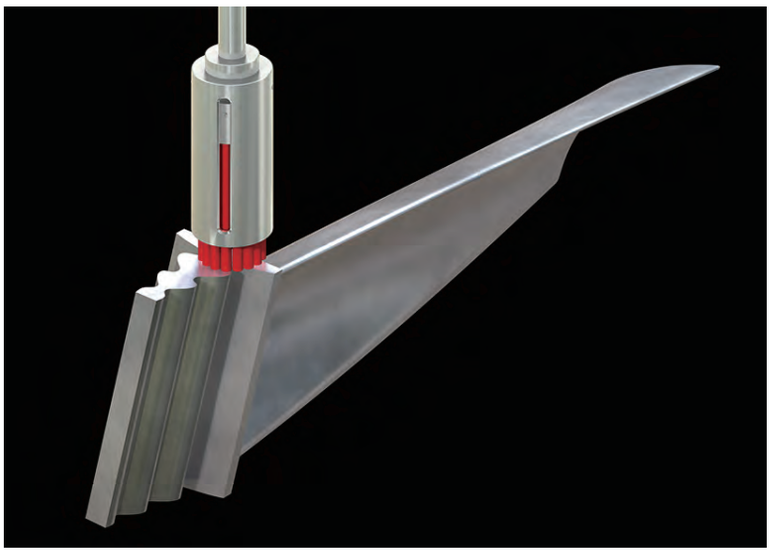
XEBEC® BEAUTIFUL DEBURRING

Applications

Turbine blade



Workpiece information

Industry	Aerospace
Part name	Turbine blade
Material type	SUS316
Cutting process	Ball end mill processing

Processing conditions

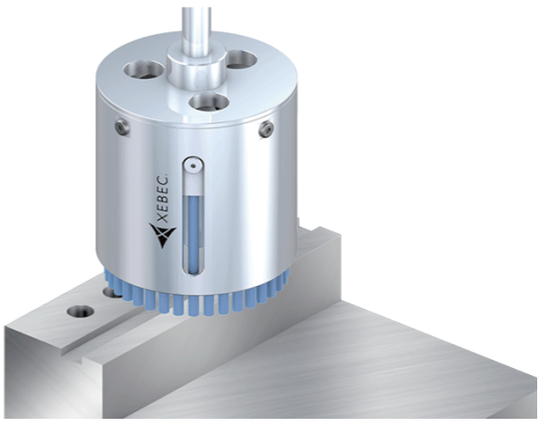
Tool	XEBEC Brush Surface (A11-CB25M)
Processing detail	Deburring after ball-end milling process
Spindle Speed (min $^{-1}$)	1,000
Table Feed (mm/min)	1,000
Depth of cut (mm)	0.3
Machining time (sec)	—

Before

Tool	File
Problem	Deburring caused unstable edge quality. Recovering process was required.

After

Tool	XEBEC Brush Surface (A11-CB25M)
Result	By the introduction of automated deburring, stable quality with even edge shape realized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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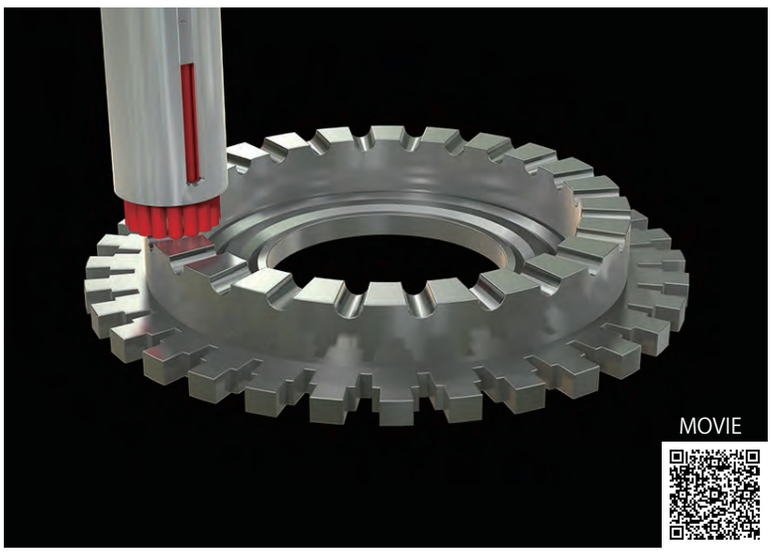
XEBEC® BEAUTIFUL DEBURRING

Applications

Turbine disk



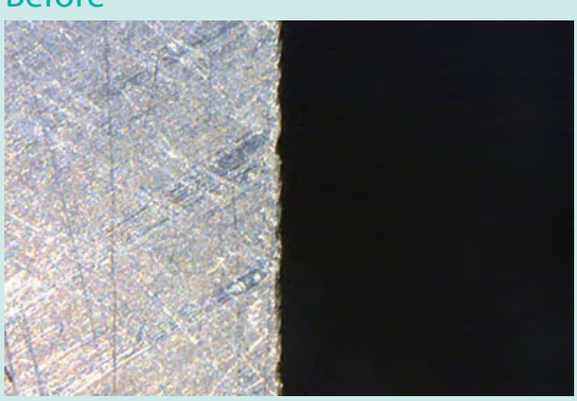
Workpiece information

Industry	Aerospace
Part name	Turbine disk
Material type	Inconel
Cutting process	Others

Processing conditions

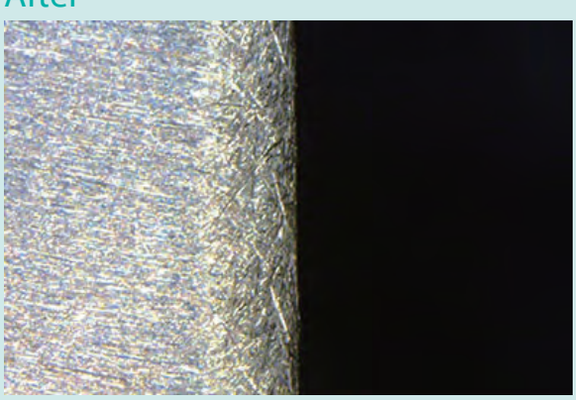
Tool	XEBEC Brush Surface (A11-CB40M)
Processing detail	Deburring after grinding process
Spindle Speed (min $^{-1}$)	1,500
Table Feed (mm/min)	2,400
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

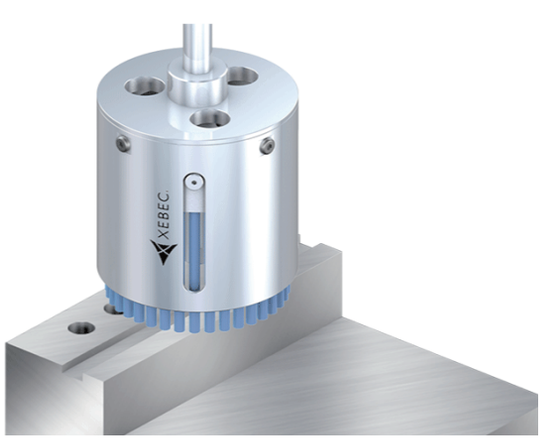


Tool	Grindstone
Problem	Burrs remained and edge quality was inconsistent.

After



Tool	XEBEC Brush Surface (A11-CB40M)
Result	Achieved full automation with machining center. No burrs left and quality stabilized.



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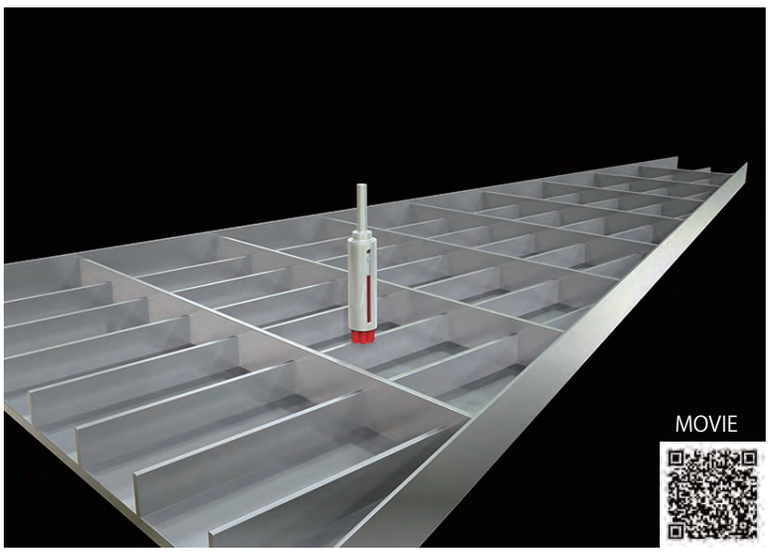
Applications

Wing rib



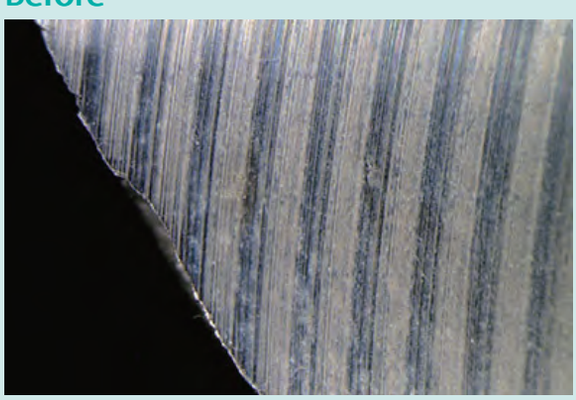
Workpiece information

Industry	Aerospace
Part name	Wing rib
Material type	Aluminum
Cutting process	End mill processing

Processing conditions

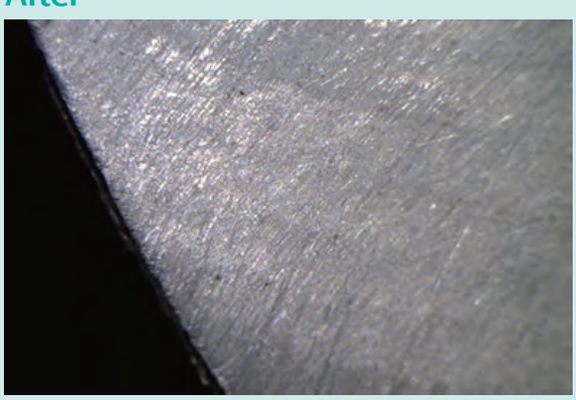
Tool	XEBEC Brush Surface (A11-CB25M)
Processing detail	Deburring after end milling process
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	800
Depth of cut (mm)	0.7
Machining time (sec)	—

Before

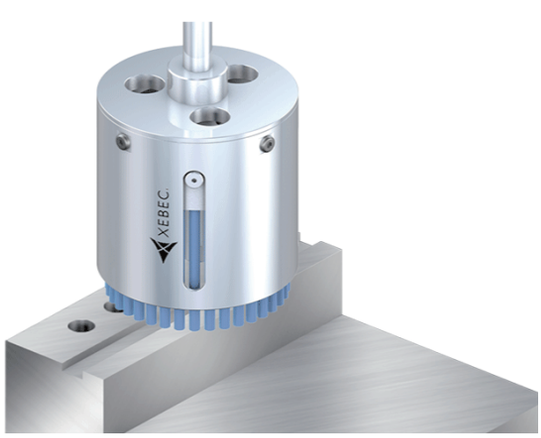


Tool	Belt sander
Problem	It took time for deburring due to large workpiece.

After



Tool	XEBEC Brush Surface (A11-CB25M)
Result	By the introduction of automated deburring, stable quality realized in a shorter cycle time.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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XEBEC® BEAUTIFUL DEBURRING

Medical

Applications

Artificial bone

Workpiece information

Industry	Medical
Part name	Artificial bone
Material type	Stainless
Cutting process	End mill processing

Processing conditions

Tool	XEBEC Brush Surface (A31-CB06M)
Processing detail	Removal of cutter marks and polishing after end milling process
Spindle Speed (min $^{-1}$)	6,500
Table Feed (mm/min)	1,200
Depth of cut (mm)	0.5

Before

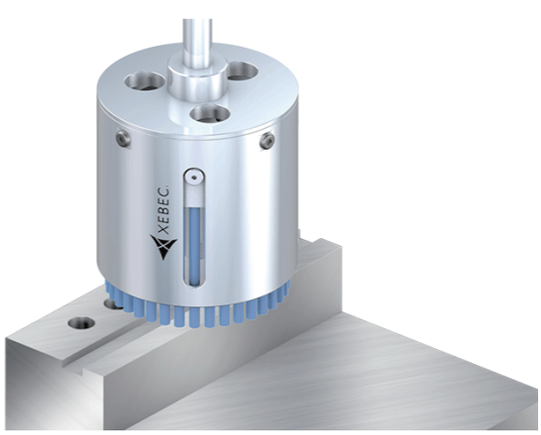
Tool: Grindstone, sandpaper

Problem: It took time for deburring by manual work. Resulted in unstable quality.

After

Tool: XEBEC Brush Surface (A31-CB06M)

Result: Automated deburring with stable quality in a shorter cycle time realized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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XEBEC BEAUTIFUL DEBURRING

Applications

Artificial hip joint

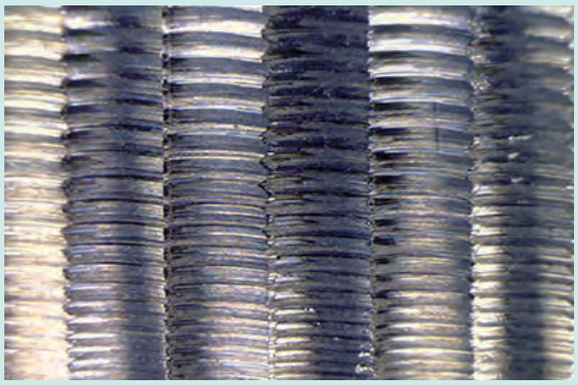
Workpiece information

Industry	Medical
Part name	Artificial hip joint
Material type	Titanium alloy
Cutting process	Ball end mill processing

Processing conditions

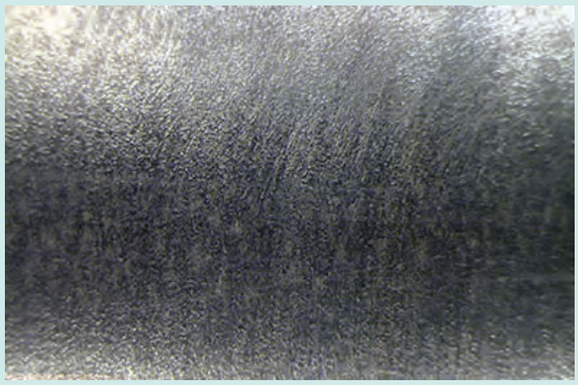
Tool	XEBEC Brush for Surface (A21-CB25M)
Processing detail	Removal of cutter marks after ball-end milling process
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	1,500
Depth of cut (mm)	0.4

Before

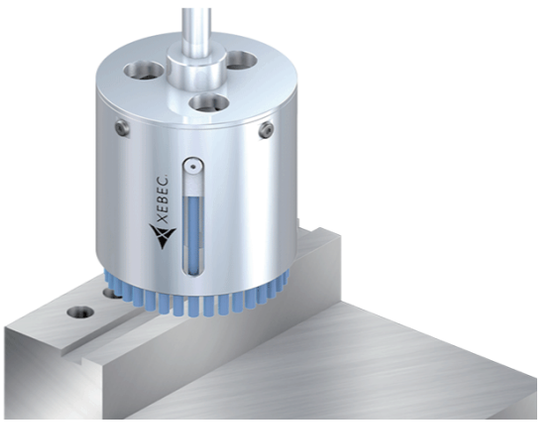


Tool	Sandpaper
Problem	Manual processing caused uneven surface.

After



Tool	XEBEC Brush for Surface (A21-CB25M)
Result	Fully automated polishing enabled complete removal of cutter marks and improvement of surface quality.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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XEBEC® BEAUTIFUL DEBURRING

Applications

Convex surface

Workpiece information

Industry	Medical
Part name	Convex surface
Material type	Cobalt-chromium alloy
Cutting process	Cutting

Processing conditions

Tool	XEBEC Brush Surface (A13-CB06M)
Processing detail	Removal of cutter marks and polishing after end milling process
Work piece rotational speed (min $^{-1}$)	450
Spindle Speed (min $^{-1}$)	3,440 (Pre-finishing process) 8,100 (Finishing process)
Table Feed (mm/min)	0.1

Before

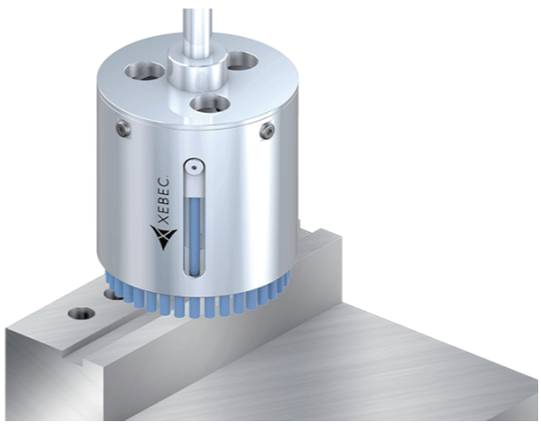
Tool — Grindstone, sandpaper

Problem — It took time for deburring by manual work. Resulted in unstable quality.

After

Tool — XEBEC Brush Surface (A13-CB06M)

Result — Automated deburring with stable quality in a shorter cycle time realized.



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XEBEC® BEAUTIFUL DEBURRING

Applications

Cup

Workpiece information

Industry	Medical
Part name	Cup
Material type	Cobalt-chromium alloy
Cutting process	Turning

Processing conditions

Tool	XEBEC Brush for Surface (A13-CB06M)
Processing detail	Removal of cutter marks and polishing after end milling process
Work piece rotational speed (min $^{-1}$)	2,250
Spindle Speed (min $^{-1}$)	1,800
Table Feed (mm/min)	0.1
Depth of cut (mm)	0.2

Before

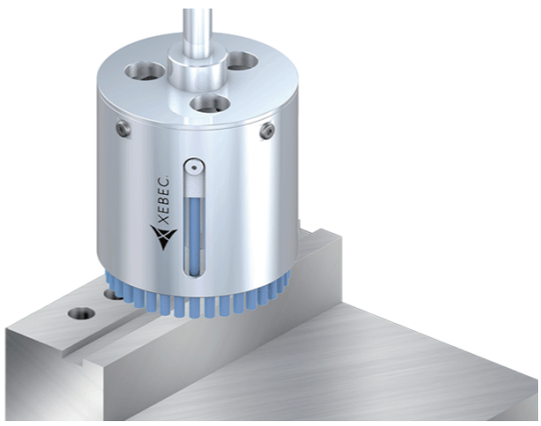
Tool: Grindstone, sandpaper

Problem: It took time for deburring by manual work. Resulted in unstable quality.

After

Tool: XEBEC Brush for Surface (A13-CB06M)

Result: By CNC machine polishing, stable quality realized in a short cycle time.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

Ideal for deburring, cutter mark removal and polishing on surface

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XEBEC® BEAUTIFUL DEBURRING

General Machinery

Applications

Board

Workpiece information

Industry	General Machinery
Part name	Board
Material type	AC4C
Cutting process	Face mill processing

Processing conditions

Tool	XEBEC Brush Surface (A11-CB100M) XEBEC Floating Holder (FH-ST20)
Processing detail	Removal of cutter marks and polishing after milling process
Spindle Speed (min $^{-1}$)	960
Table Feed (mm/min)	2,400
Depth of cut (mm)	0.2
Machining time (sec)	—

Before

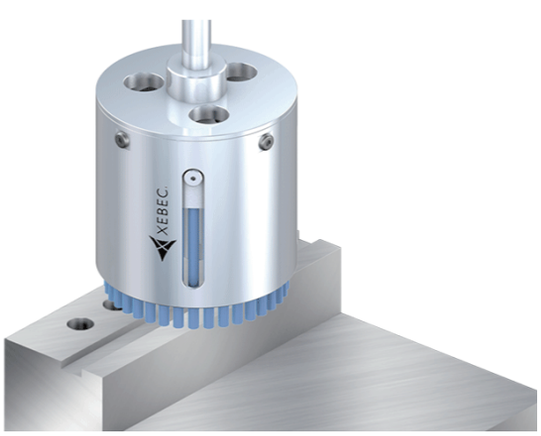
Tool: Sandpaper

Problem: It was necessary to apply several abrasive papers with different grits. Work hours consuming.

After

Tool: XEBEC Brush Surface (A11-CB100M)
XEBEC Floating Holder (FH-ST20)

Result: Fully automated machine polishing enabled finishing operation in a shorter time.



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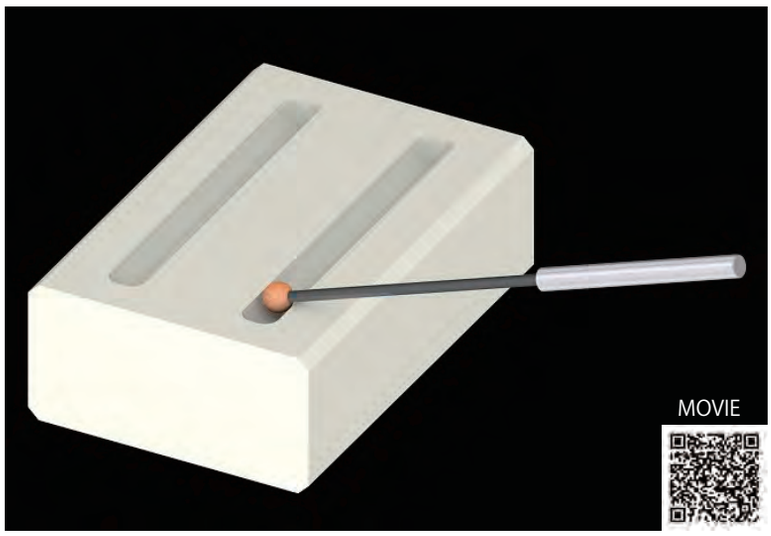
XEBEC® BEAUTIFUL DEBURRING

Applications

Ceramic parts



Workpiece information

Industry	General Machinery
Part name	Ceramic parts
Material type	Brittle material
Cutting process	Others

Processing conditions

Tool	XEBEC Stone Flexible Shaft Type (CH-PO-4B)
Processing detail	Polishing the bottom part after grooving process
Spindle Speed (min $^{-1}$)	4,000
Depth of cut (mm)	0.5

Before

Tool: Sandpaper

Problem: Polishing was done by sandpaper. It damaged the edge shape. Besides, sandpapers wore out easily and replacement required frequently.

After

Tool: XEBEC Stone Flexible Shaft Type (CH-PO-4B)

Result: Simplified deburring realized by moving tools across the groove. Edge quality stabilized.

Hole deburring

Tool XEBEC Stone ™ Flexible Shaft

Flexible shaft allows soft contact with a workpiece and suppresses subtle vibration when being processed.

Ideal for deburring the front and back of a drilled hole both.

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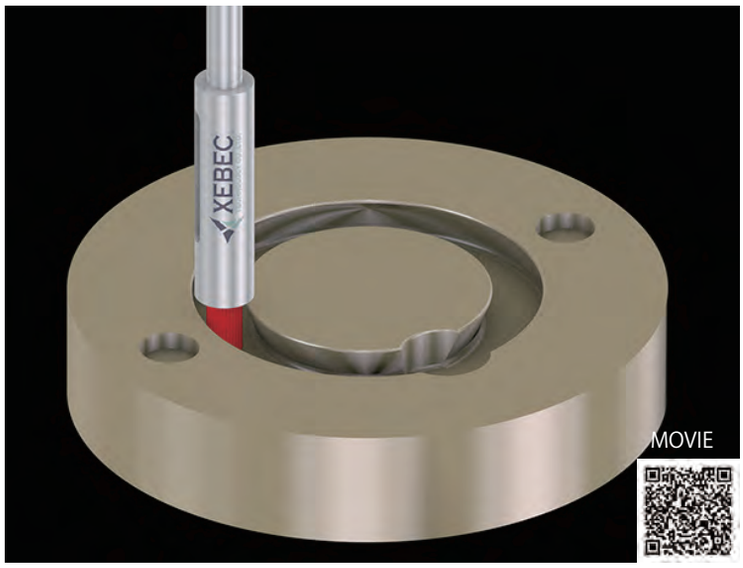
XEBEC BEAUTIFUL DEBURRING

Applications

Dovetail groove



Workpiece information

Industry	General Machinery
Part name	Dovetail groove
Material type	Iron-based
Cutting process	—

Processing conditions

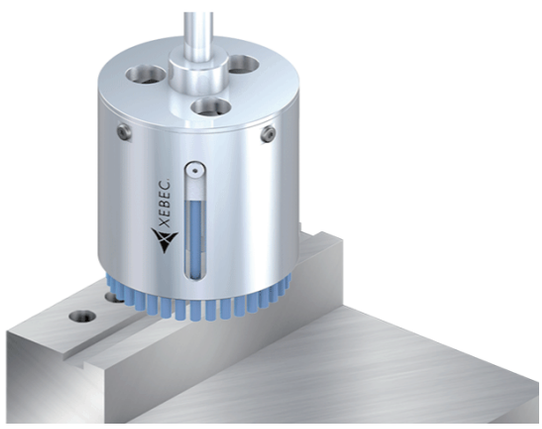
Tool	XEBEC Brush for surface (A11-CB06M)
Processing detail	Removal of cutter marks and polishing after dovetailing process
Spindle Speed (min $^{-1}$)	10,000
Table Feed (mm/min)	1,000
Depth of cut (mm)	0.3

Before

Tool	Grindstone, Sandpaper
Problem	Burrs were at hard-to-reach part. It took time for polishing.

After

Tool	XEBEC Brush for Surface (A11-CB06M)
Result	Polishing in a shorter time realized with stable quality.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

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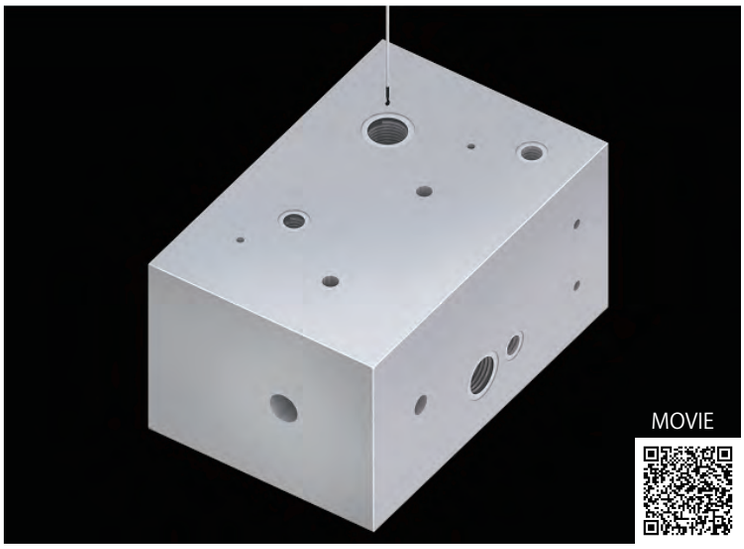
XEBEC® BEAUTIFUL DEBURRING

Applications

Hydraulic block



Workpiece information

Industry	General Machinery
Part name	Hydraulic block
Material type	Aluminum
Cutting process	Drilling

Processing conditions

Tool	XEBEC Back Burr Cutter and Path (XC-28-B)
Processing detail	Back deburring after drilling
Spindle Speed (min $^{-1}$)	2,000
Table Feed (mm/min)	160
Depth of cut (mm)	—
Machining time (sec)	—

Before

Tool: Grindstone

Problem: CNC deburring was given up once due to various combinations of cross holes and tools were required respectively. Manual deburring with files was inefficient and time consuming.

After

Tool: XEBEC Back Burr Cutter and Path (XC-28-B)

Result: CNC deburring realized with just 1 type of tool despite many combinations of holes to deburr.

Deburring after drilling

Tool XEBEC Back Burr Cutter and Path™

Perfect for deburring both front and back of a drilled hole

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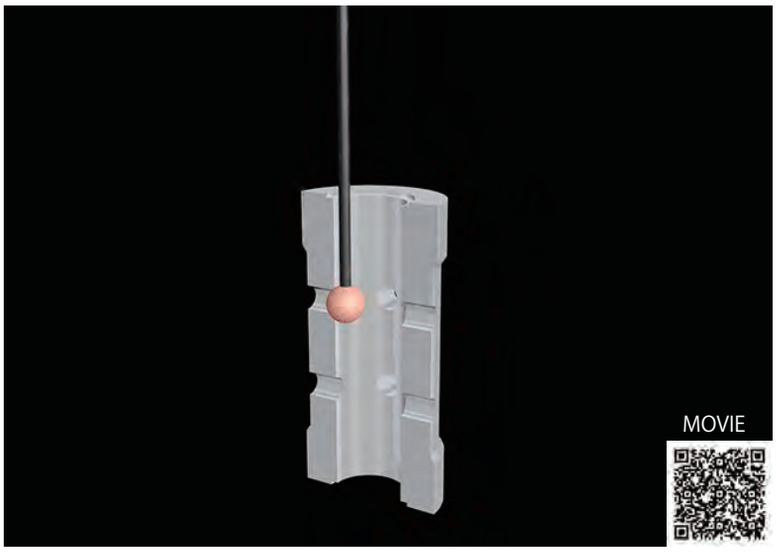
XEBEC® BEAUTIFUL DEBURRING

Applications

Hydraulic valve (Cross hole)



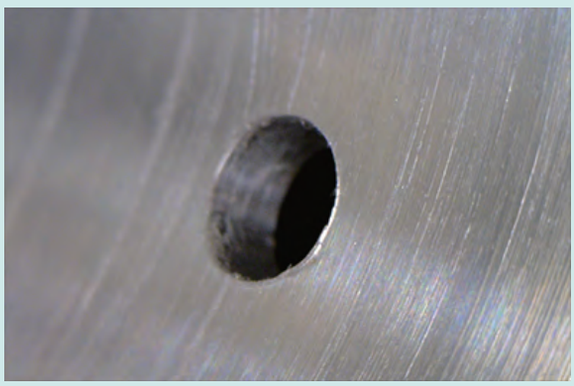
Workpiece information

Industry	General Machinery
Part name	Hydraulic valve (Cross hole)
Material type	Steel-based
Cutting process	Drilling

Processing conditions

Tool	XEBEC Stone Flexible Shaft Type (CH-PM-5R-C01)
Processing detail	Crosshole (blind hole) deburring after drilling process
Spindle Speed (min $^{-1}$)	5,000-8,000
Table Feed (mm/min)	—
Depth of cut (mm)	0.5

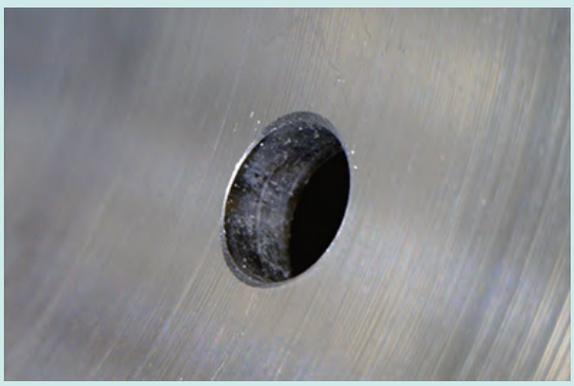
Before



Tool: Rubber wheel,
carbide rotary bar on the rotating tool

Problem: The shape of edge was damaged
and secondary burrs generated by
deburring.

After



Tool: XEBEC Stone Flexible Shaft Type
(CH-PM-5B)

Result: Allows the tool to contact with
bending the shaft softly
(displacement of bending = 0.5mm
approximately).
Enables to remove the burrs only
with keeping the shape of the edge.
Achieved good processing efficiency.
The process used to cause tiredness
for workers due to the long and
narrow shape of workpiece.

Tool　XEBEC Stone ™ Flexible Shaft

Flexible shaft allows soft contact with a workpiece and
suppresses subtle vibration when being processed.
Ideal for deburring the front and back of drilled holes both.

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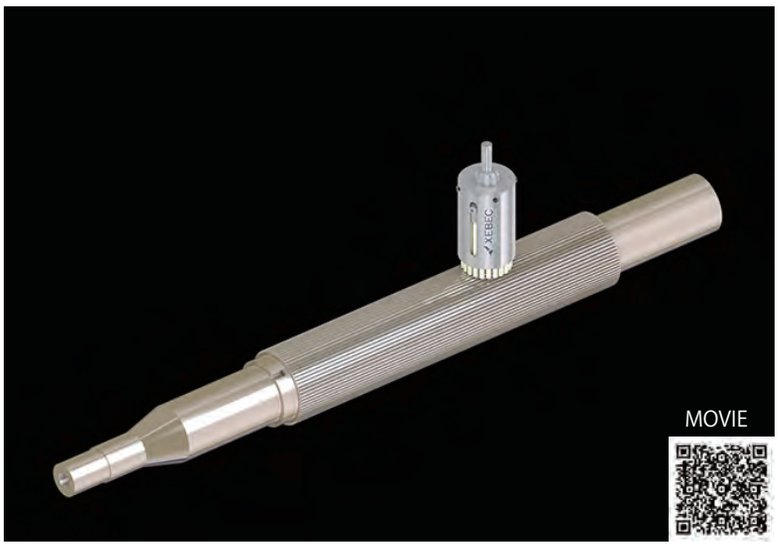
XEBEC® BEAUTIFUL DEBURRING

Applications

Ink roll



Workpiece information

Industry	General Machinery
Part name	Ink roll
Material type	Iron-based
Cutting process	Turning

Processing conditions

Tool	XEBEC Brush Surface (A21-CB40M)
Processing detail	Deburring of cylinder surface after grinding process
Spindle Speed (min $^{-1}$)	1,080
Table Feed (mm/min)	3,600
Depth of cut (mm)	0.5

Before

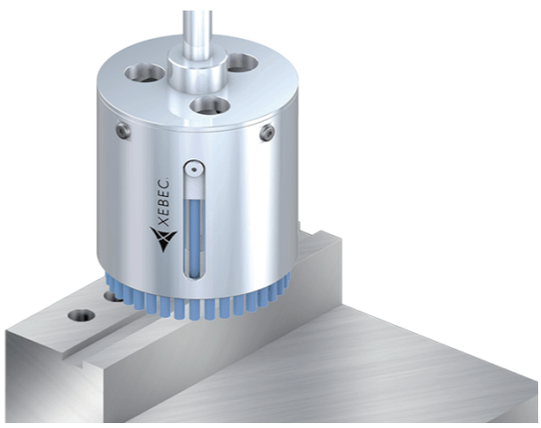
Tool: File

Problem: Approximately 1mm-deep burrs are generated on the entire surface of a shaft over 800 mm. It took time for deburring.

After

Tool: XEBEC Brush Surface (A21-CB40M)

Result: By introduction of fully automated deburring, process time decreased from several hours to 15 min.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

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XEBEC® BEAUTIFUL DEBURRING

Applications

Jig plate

Workpiece information

Industry	General Machinery
Part name	Jig plate
Material type	Alminium
Cutting process	Drilling

Processing conditions

Tool	XEBEC Brush for Surface (A11-CB40M)
Processing detail	Deburring after drilling with φ1.2mm tool
Spindle Speed (min $^{-1}$)	2,000
Table Feed (mm/min)	4,000
Depth of cut (mm)	0.5
Machining time (sec)	—

Before

Tool: Sandpaper

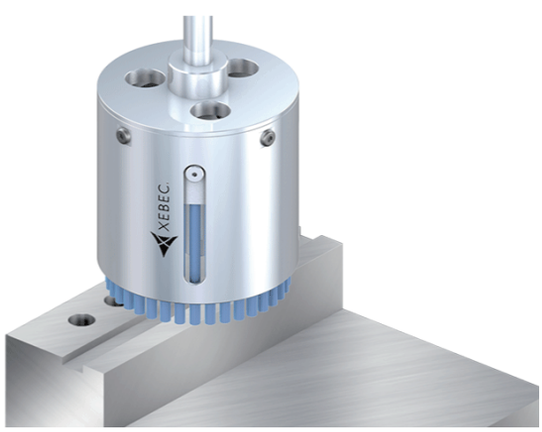
Problem: It took time for deburring. Secondary burrs occurred in the holes sometimes.

φ1.2

After

Tool: XEBEC Brush for Surface (A11-CB40M)

Result: Shorter deburring cycle time and stable quality realized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

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XEBEC® BEAUTIFUL DEBURRING

Applications

Joint (Blind hole)

Workpiece information

Industry	General Machinery
Part name	Joint (Blind hole)
Material type	SUS
Cutting process	Drilling

Processing conditions

Tool	XEBEC Stone Flexible Shaft (CH-PM-5R-C01)
Processing detail	Cross hole (Blind hole) deburring after drilling process
Spindle Speed (min $^{-1}$)	5,000-8,000
Depth of cut (mm)	0.5

Before

Tool — Rotating tool with drill and rubber grind stone

Problem — Unstable quality due to secondary burrs by drilling and rubber grindstone clogged.

After

Tool — XEBEC Stone Flexible Shaft Type (CH-PM-5R-C01)

Result — No secondary burrs left. Stable and efficient deburring quality realized.

Hole deburring

Tool XEBEC Stone ™ Flexible Shaft

Flexible shaft allows soft contact with a workpiece and suppresses subtle vibration when being processed.

Ideal for deburring the front and back of drilled holes both.

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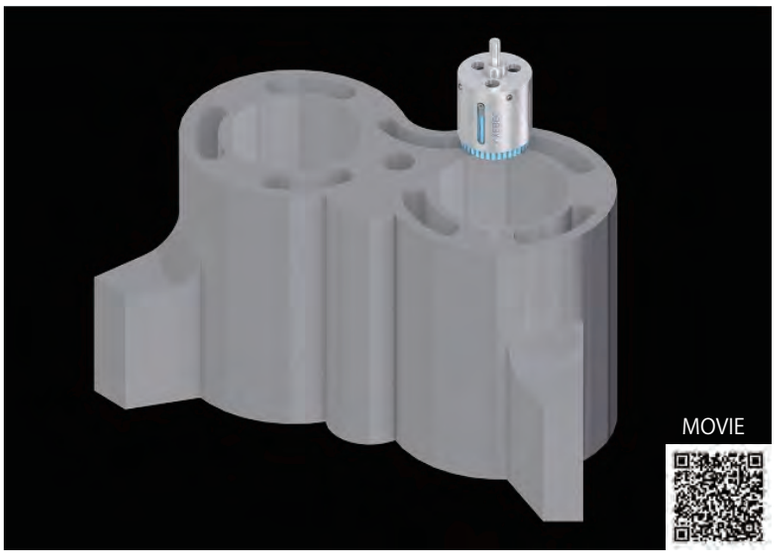
XEBEC BEAUTIFUL DEBURRING

Applications

Large cast iron parts



Workpiece information

Industry	General Machinery
Part name	Large cast iron parts
Material type	FC300
Cutting process	Face mill processing

Processing conditions

Tool	XEBEC Brush Surface (A31-CB100M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	860
Table Feed (mm/min)	2,300
Depth of cut (mm)	1
Machining time (sec)	30

Before

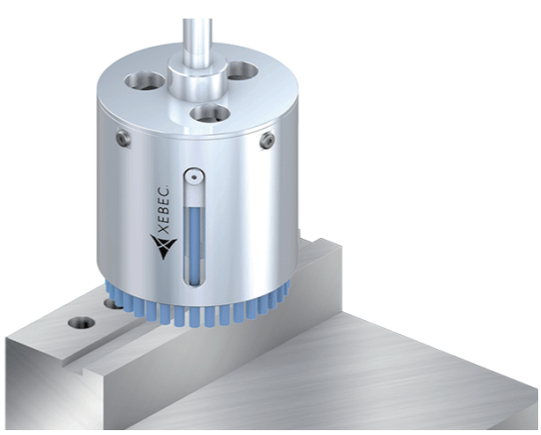
Tool: Disc sander

Problem: It took time for deburring due to large workpiece over 400mm.

After

Tool: XEBEC Brush Surface (A31-CB100M)

Result: Automated deburring enables consistent finishing in a shorter time.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

Ideal for deburring, cutter mark removal and polishing on surface

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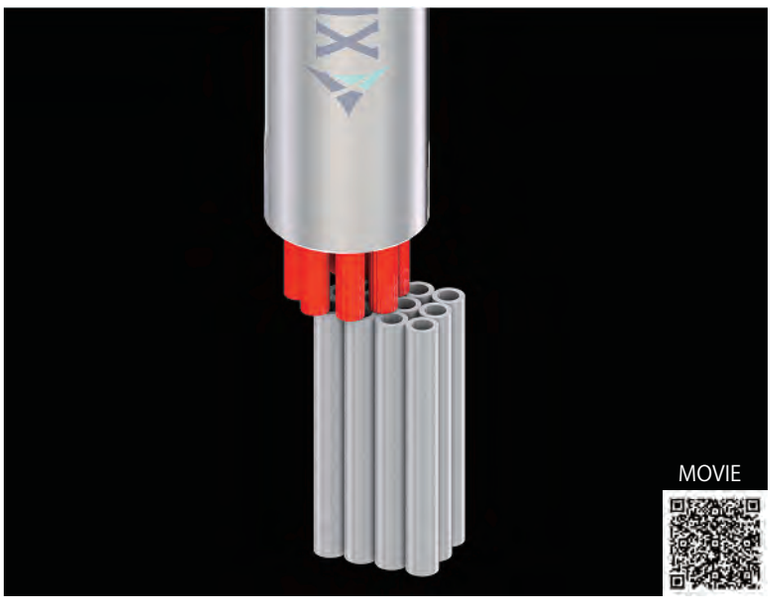
XEBEC® BEAUTIFUL DEBURRING

Applications

Pipe (Edge face)



Workpiece information

Industry	General Machinery
Part name	Pipe (Aluminum)
Material type	Aluminum
Cutting process	Cutting processing

Processing conditions

Tool	XEBEC Brush Surface (A11-CB25M)
Processing detail	Deburring the section after cutting process
Spindle Speed (min $^{-1}$)	4,000
Table Feed (mm/min)	3,000
Depth of cut (mm)	1.0
Machining time (sec)	—

Before

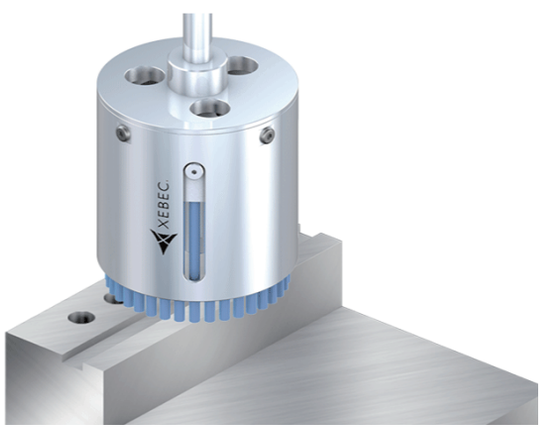
Tool: File

Problem: Burrs on the inside and outside edges of the pipe were manually removed by filing. Time-consuming and inefficient work. Finish quality was not consistent.

After

Tool: XEBEC Brush Surface (A11-CB25M)

Result: Fix and put 12 pipes together with a jig and deburr them all at once. Achieved efficient automatic deburring in a shorter time. Edge shapes became uniform and finish quality was improved.



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XEBEC® BEAUTIFUL DEBURRING

Applications

Pipes （SUS）

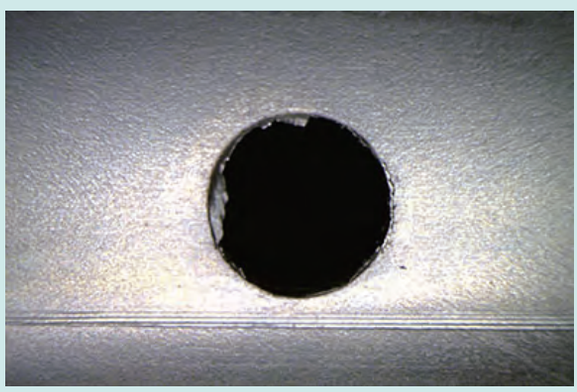
Workpiece information

Industry	General Machinery
Part name	Pipes （SUS）
Material type	SUS304
Cutting process	Drilling

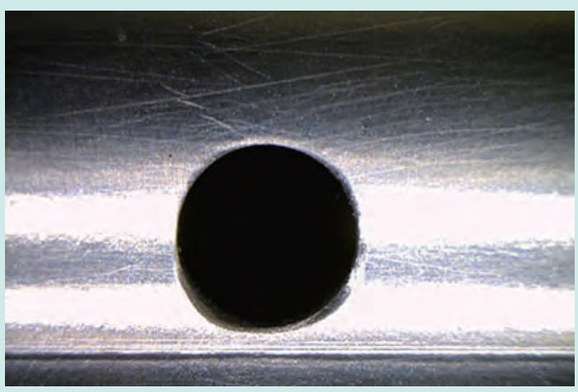
Processing conditions

Tool	XEBEC Brush Crosshole (CH-A33-7M)
Processing detail	Crosshole deburring and internal polishing after drilling process
Spindle Speed (min $^{-1}$)	8,000
Table Feed (mm/min)	300
Depth of cut (mm)	—

Before



After



Tool	XEBEC Brush Crosshole (CH-A33-7M)
Result	All burrs removed in one process and no secondary burrs generated.

Deburring after drilling

Cutter mark removal and inner diameter polishing

Tool　XEBEC Brush ™ Crosshole

Ideal for deburring, polishing and cutter mark removal on inner diameter and counterbored part

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XEBEC® BEAUTIFUL DEBURRING

Applications

Spool

Workpiece information

Industry	General Machinery
Part name	Spool
Material type	Iron-based
Cutting process	Drilling

Processing conditions

Tool	XEBEC Stone Flexible Shaft Type (CH-PM-6B)
Processing detail	Deburring the edge after end milling process
Spindle Speed (min $^{-1}$)	5,000
Depth of cut (mm)	0.5

Before

Tool: File

Problem: There were problems such as unstable edge shapes and secondary burrs.

After

Tool: XEBEC Stone Flexible Shaft Type (CH-PM-6B)

Result: Simplified deburring realized by moving the tool across the groove. No secondary burrs were reported and quality stabilized.

Hole deburring

Tool XEBEC Stone ™ Flexible Shaft

Flexible shaft allows soft contact with a workpiece and suppresses subtle vibration when being processed.

Ideal for deburring the front and back of drilled holes both.

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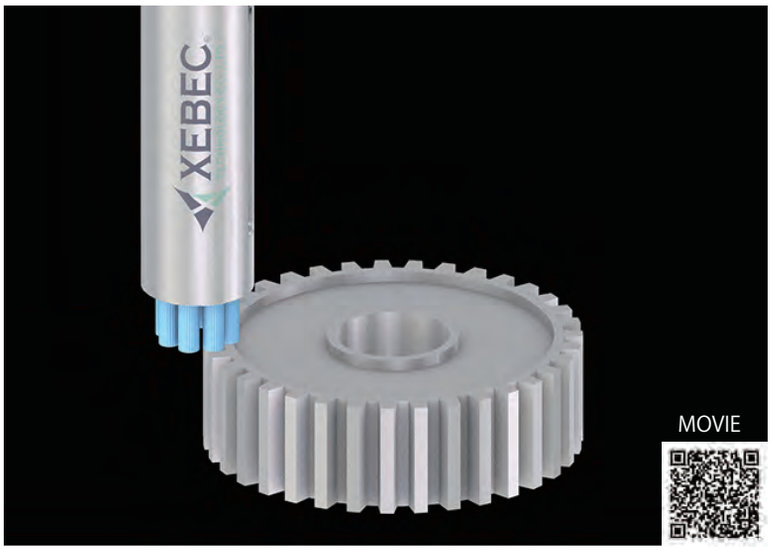
XEBEC® BEAUTIFUL DEBURRING

Applications

Spur gear



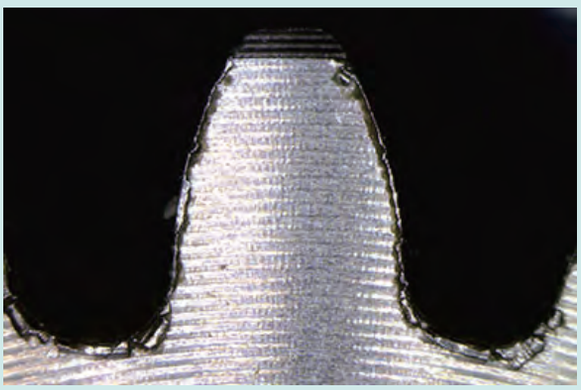
Workpiece information

Industry	General Machinery
Part name	Spur gear
Material type	S45C
Cutting process	Gear cutting

Processing conditions

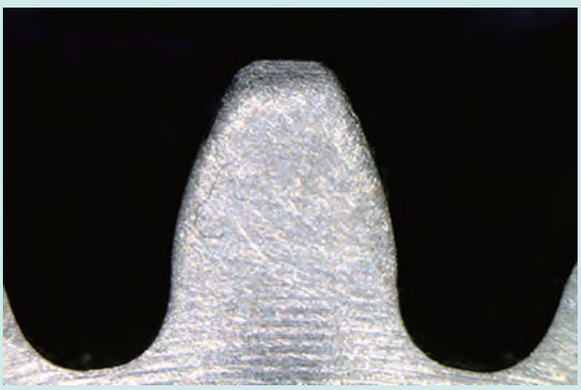
Tool	XEBEC Brush for Surface (A31-CB25M)
Processing detail	Deburring the gear edge face after hobbing process
Spindle Speed (min $^{-1}$)	5,000
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.5

Before

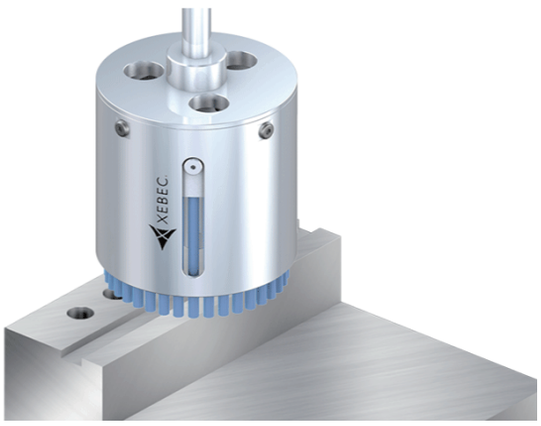


Tool	Grindstone
Problem	It took time for deburring due to complicated shape of workpiece.

After



Tool	XEBEC Brush for Surface (A31-CB25M)
Result	Automated deburring with stable quality in a shorter cycle time realized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

Ideal for deburring, cutter mark removal and polishing on surface

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XEBEC BEAUTIFUL DEBURRING

Applications

Valve case (Cross hole)

Workpiece information

Industry	General Machinery
Part name	Valve case (Cross hole)
Material type	PP (glass fiber included)
Cutting process	Drilling

Processing conditions

Tool	XEBEC Brush Crosshole (CH-A12-5M)
Processing detail	Crosshole deburring after drilling process
Spindle Speed (min $^{-1}$)	8,000
Table Feed (mm/min)	1,000

Before

Tool: Cutter

Problem: It took time to deburr manually with cutter. Scratches left on the finishing surface.

After

Tool: XEBEC Brush Cross hole (CH-A12-5M)

Result: Automated deburring realized by custom made machine. Work efficiency improved and no burrs reported.

Deburring after drilling

Cutter mark removal and inner diameter polishing

Tool XEBEC Brush ™ Crosshole

Ideal for deburring, polishing and cutter mark removal on inner diameter and counterbored part

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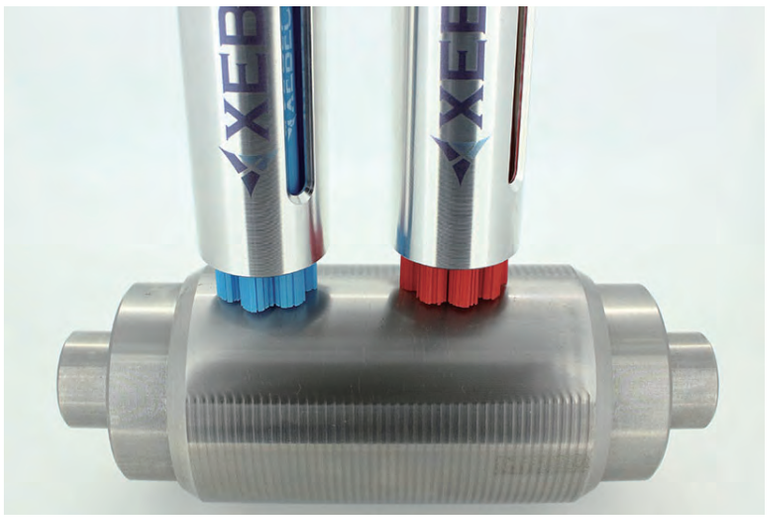
XEBEC® BEAUTIFUL DEBURRING

Applications

SUS mold



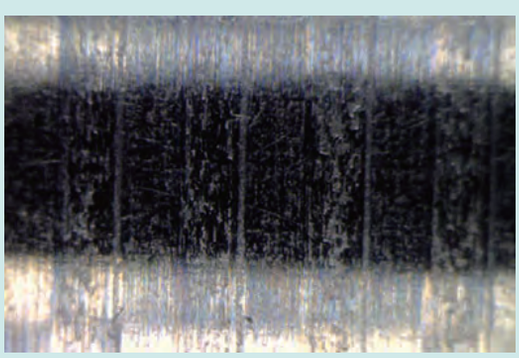
Workpiece information

Industry	General Machinery
Part name	SUS Mold
Material type	SUS304
Cutting process	End mill processing

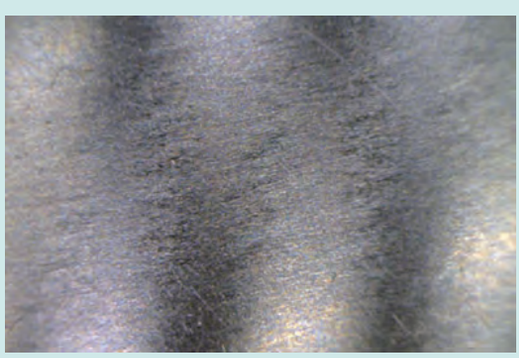
Processing conditions

Tool	XEBEC Brush for Surface (A31-CB25M+A11-CB25M)
Processing detail	Removal of cutter marks and polishing after ball-end milling process Tool used ：A31-CB25M, Rotation speed ：5000min $^{-1}$, Feed ：1500mm/min , Depth of cut ：0.3 mm and Tool used ：A11-CB25M, Rotation speed ：5000min $^{-1}$, Feed ：6000mm/min , Depth of cut ：0.3mm
Spindle Speed (min $^{-1}$)	3,200
Table Feed (mm/min)	1,500
Depth of cut (mm)	0.1
Machining time (sec)	81

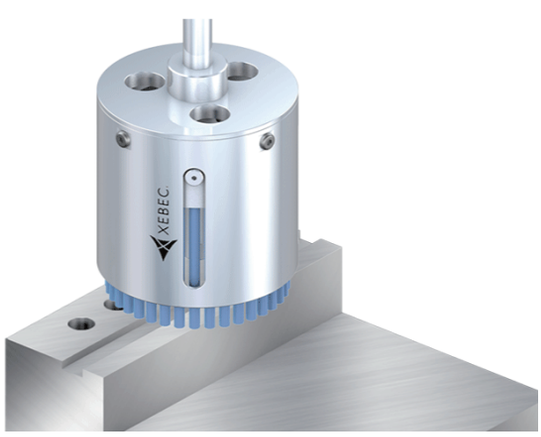
Before



After



Tool	XEBEC Brush for Surface (A31-CB25M+A11-CB25M)
Result	Surface roughness improved from Ra 0.21 μm, Rz 1.56 μm to Ra 0.03 μm, Rz 0.35 μm respectively.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool　XEBEC Brush ™ Surface

Ideal for deburring, cutter mark removal and polishing on surface

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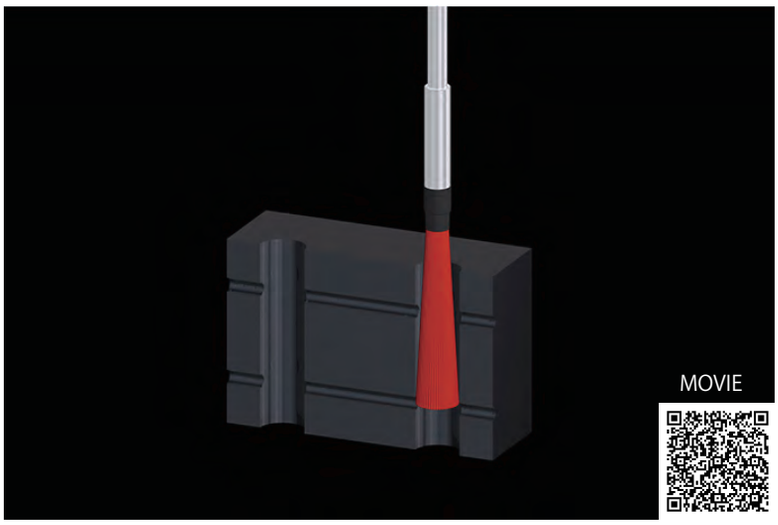
XEBEC® BEAUTIFUL DEBURRING

Applications

Valve case (Cross hole)



Workpiece information

Industry	General Machinery
Part name	Valve case (Cross hole)
Material type	PP (Glass fiber included)
Cutting process	Drilling

Processing conditions

Tool	XEBEC Brush Cross hole (CH-A12-5M)
Processing detail	Cross hole deburring after drilling process
Spindle Speed (min^{-1})	8,000
Table Feed (mm/min)	1,000
Depth of cut (mm)	—

Before

Tool: Cutter

Problem: It took time to deburr manually with cutter. Scratches left on the finishing surface.

After

Tool: XEBEC Brush Cross hole (CH-A12-5M)

Result: Automated deburring realized by custom made machine. Work efficiency improved and no burrs reported.

Deburring after drilling

Cutter mark removal and inner diameter polishing

Tool XEBEC Brush ™ Crosshole

Ideal for deburring, polishing and cutter mark removal on inner diameter and counterbored part

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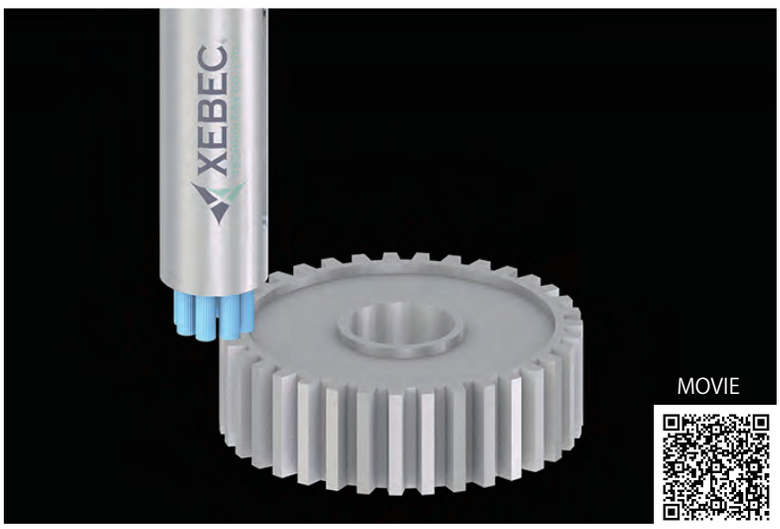
XEBEC® BEAUTIFUL DEBURRING

Applications

Spur gear



MOVIE

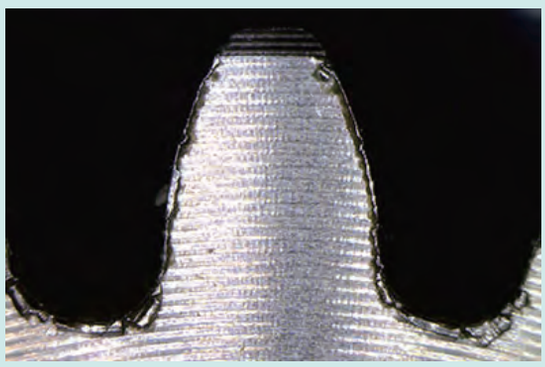
Workpiece information

Industry	General Machinery
Part name	Spur gear
Material type	S45C
Cutting process	Gear cutting

Processing conditions

Tool	XEBEC Brush for Surface (A31-CB25M)
Processing detail	Deburring the gear edge face after hobbing process
Spindle Speed (min $^{-1}$)	5,000
Table Feed (mm/min)	2,000
Depth of cut (mm)	0.5

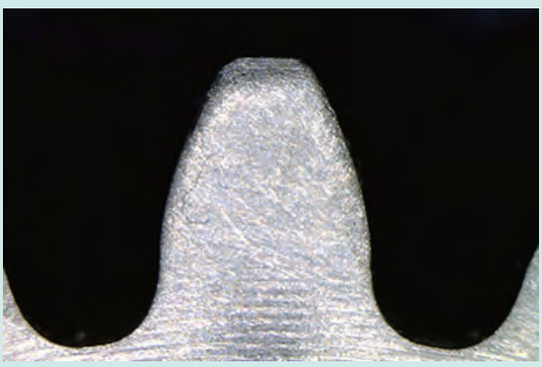
Before



Tool: Grindstone

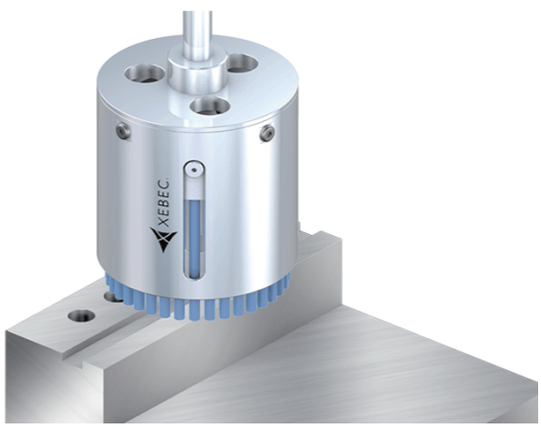
Problem: It took time for deburring due to complicated shape of workpiece.

After



Tool: XEBEC Brush for Surface (A31-CB25M)

Result: Automated deburring with stable quality in a shorter cycle time realized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

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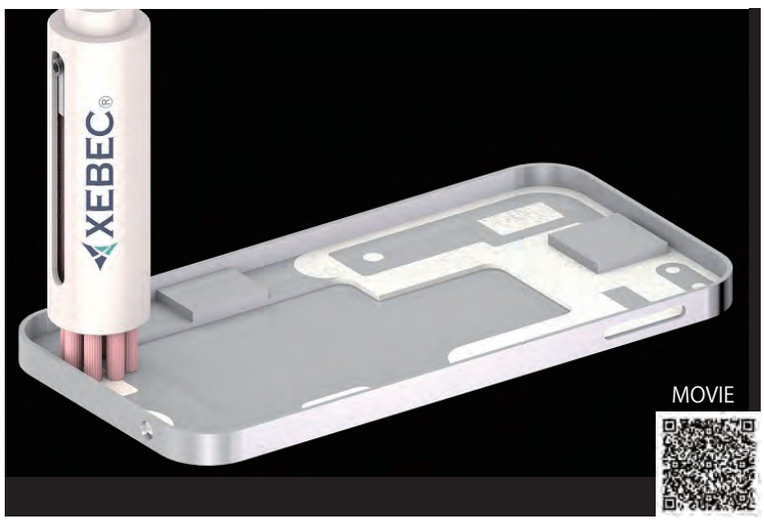
XEBEC® BEAUTIFUL DEBURRING

Electronics

Applications

Smartphone (Body)



Workpiece information

Industry	Electronics
Part name	Smartphone (Body)
Material type	Aluminium and plastic based complex material
Cutting process	End milling

Processing conditions

Tool	XEBEC Brush Surface (A13-CB15M)
Processing detail	Deburring after end milling process
Spindle Speed (min $^{-1}$)	3,000
Table Feed (mm/min)	4,000
Depth of cut (mm)	0.5
Machining time (sec)	—

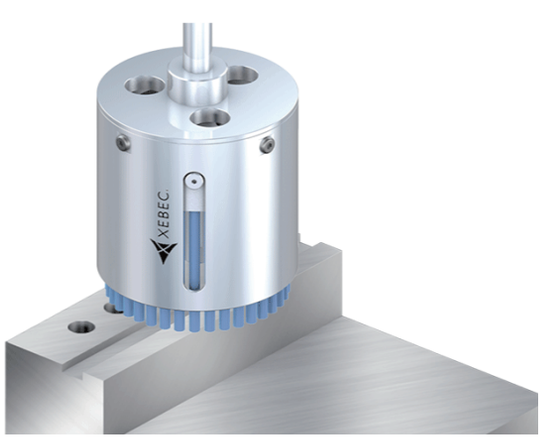
Before

Problem — It was necessary to design machining line under the prerequisite that deburring is automated.

After

Tool — XEBEC Brush Surface (A13-CB15M)

Result — Fully automated deburring in a machining center enabled stable and efficient deburring.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

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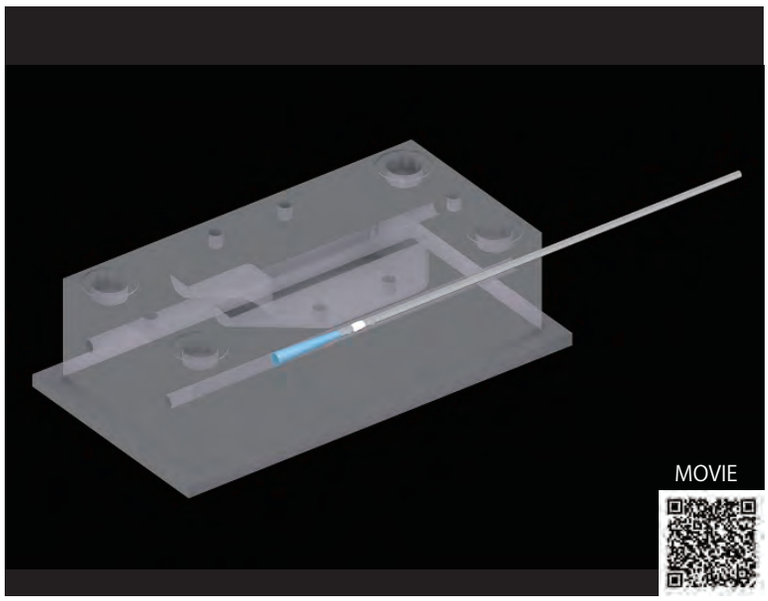
XEBEC® BEAUTIFUL DEBURRING

Mold

Applications

Mold （Cooling hole）



Workpiece information

Industry	Mold
Part name	Mold （Cooling hole ）
Material type	SKD60
Cutting process	Reaming

Processing conditions

Tool	XEBEC Brush Crosshole (CH-A33-7F)
Processing detail	Cooling hole polishing after reaming
Spindle Speed (min $^{-1}$)	12,000
Table Feed (mm/min)	2,000
Depth of cut (mm)	—

Before

Tool: Round bar grindstone

Problem: It took time for manual use of rod grindstone. There was no tool reaching a deep hole of 300mm or more. Manhour required to make a custom-build shank in order to hold a grindstone.

After

Tool: XEBEC Brush Crosshole (CH-A33-7F)

Result: Stable finish quality in a shorter time realized.

Deburring after drilling

Cutter mark removal and inner diameter polishing

Tool　XEBEC Brush Extra-Long™ Crosshole

Suitable for deburring, polishing and cutter mark removal of inner diameter and counterbored part exceeding 150 mm in depth

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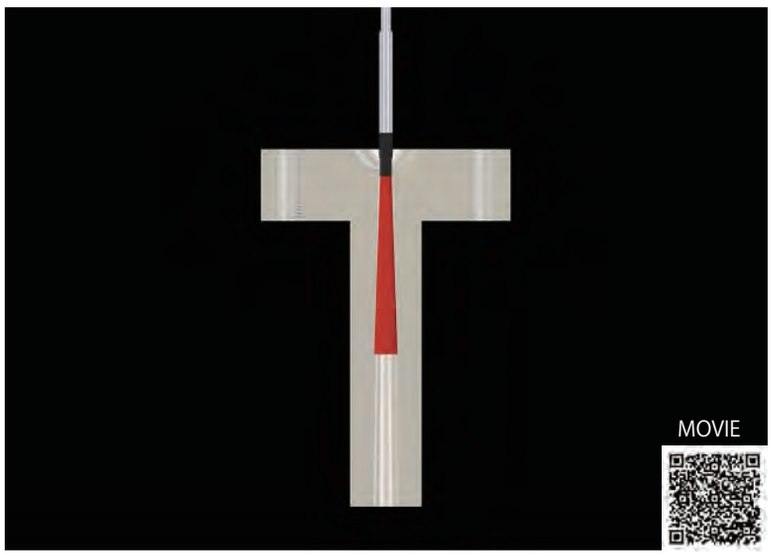
XEBEC® BEAUTIFUL DEBURRING

Applications

Mold (Sprue hole)



Workpiece information

Industry	Mold
Part name	Mold (Sprue hole)
Material type	SKD2
Cutting process	Others

Processing conditions

Tool	XEBEC Brush Crosshole (CH-A12-3M)
Processing detail	Removal of cutter marks and polishing after electrical discharge machining
Spindle Speed (min $^{-1}$)	10,000
Table Feed (mm/min)	—

Before

Tool: Round bar grindstone

Problem: Manual use of rod grindstone. It was necessary to form the tip of the grindstone to polish the tapered portion. Manual processing resulted in unstable polishing quality.

After

Tool: XEBEC Brush Crosshole (CH-A12-3M)

Result: Work efficiency improved because the shape of a brush fits to the tapered portion of a workpiece. Enables to remove cutter marks in a shorter time.

Deburring after drilling
Cutter mark removal and polishing on inner diameter

Tool XEBEC Brush ™ Crosshole

Ideal for deburring, polishing and cutter mark removal of inner diameter and counterbored part

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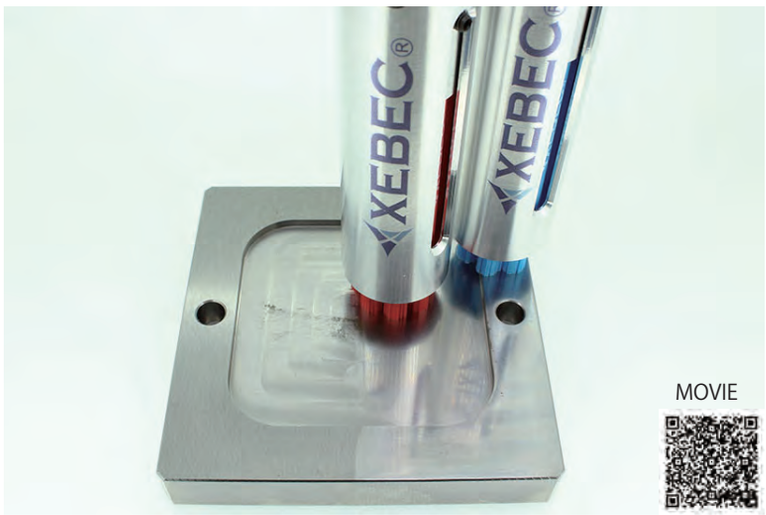
XEBEC® BEAUTIFUL DEBURRING

Applications

NAK mold



MOVIE

Workpiece information

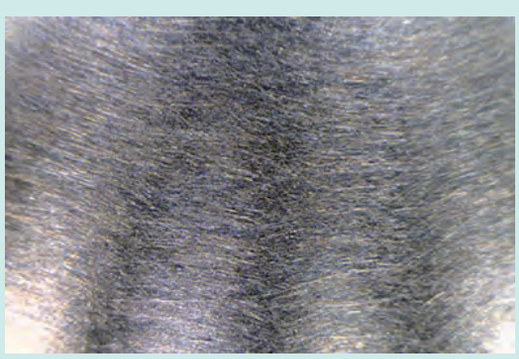
Industry	Mold
Part name	NAK Mold
Material type	NAK
Cutting process	End mill processing

Processing conditions

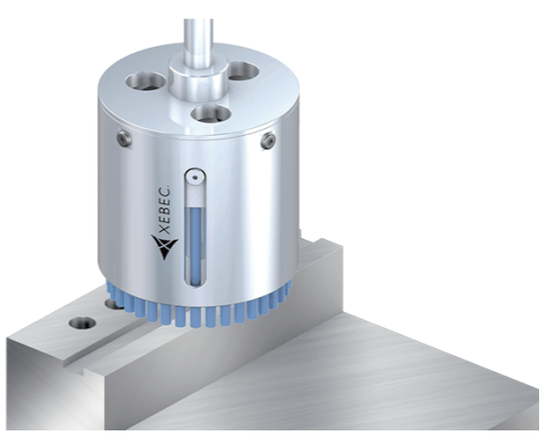
Tool	XEBEC Brush for Surface (A31-CB25M+A11-CB25M)
Processing detail	Removal of cutter marks and polishing after end milling process Tool used ：A31-CB25M, Rotation speed ：5000min $^{-1}$, Feed ：500 mm/min , Depth of cut ：0.3mm and Tool used ：A11-CB25M, Rotation speed ：5000min $^{-1}$, Feed ：500mm/min , Depth of cut ：0.2mm
Spindle Speed (min $^{-1}$)	5,000
Table Feed (mm/min)	500
Depth of cut (mm)	0.3
Machining time (sec)	50

Before

After



Tool	XEBEC Brush for Surface (A31-CB25M+A11-CB25M)
Problem	Surface roughness improved from Ra 1.4 μm, Rz 6.1 μm to Ra 0.029 μm, Rz 0.337 μm respectively.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool　XEBEC Brush ™ Surface

Ideal for deburring, cutter mark removal and polishing on surface

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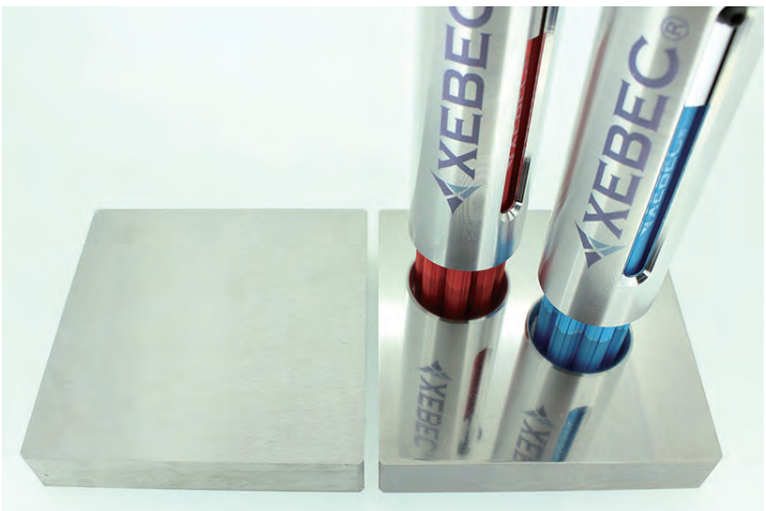
XEBEC® BEAUTIFUL DEBURRING

Applications

SKD mold



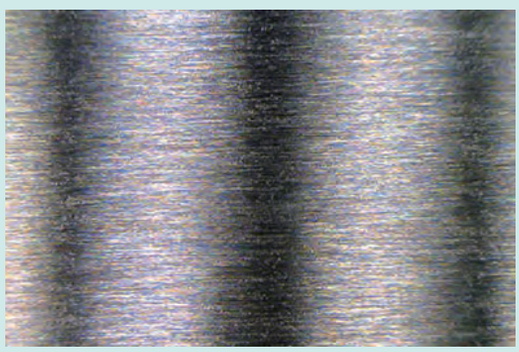
Workpiece information

Industry	Mold
Part name	SKD Mold
Material type	SKD
Cutting process	Others

Processing conditions

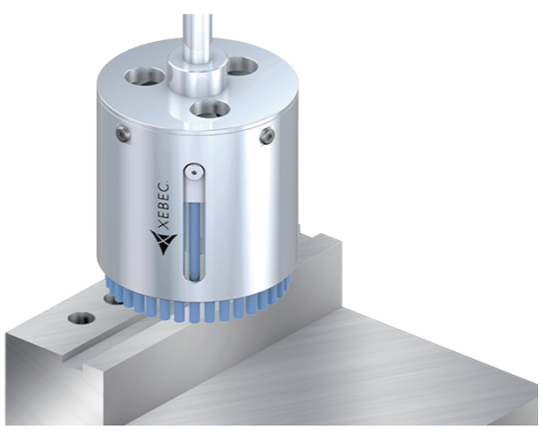
Tool	XEBEC Brush for Surface (A31-CB100M+ A11-CB100M)
Processing detail	Polishing of material surface Tool used ：A11-CB100M, Rotation speed ：1200min $^{-1}$, Feed ：600 mm/min, Depth of cut ：0.2mm and Tool used ：A11-CB100M, Rotation speed ：1,200min $^{-1}$, Feed ：600 mm/min, Depth of cut ：0.2mm
Spindle Speed (min $^{-1}$)	1,200
Table Feed (mm/min)	600
Depth of cut (mm)	0.2
Machining time (sec)	—

Before



After

Tool	XEBEC Brush for Surface (A31-CB100M+A11-CB100M)
Result	Surface roughness improved from Ra 1.4 μm, Rz 6.1 μm to Ra 0.029 μm, Rz 0.337 μm respectively.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool　XEBEC Brush ™ Surface

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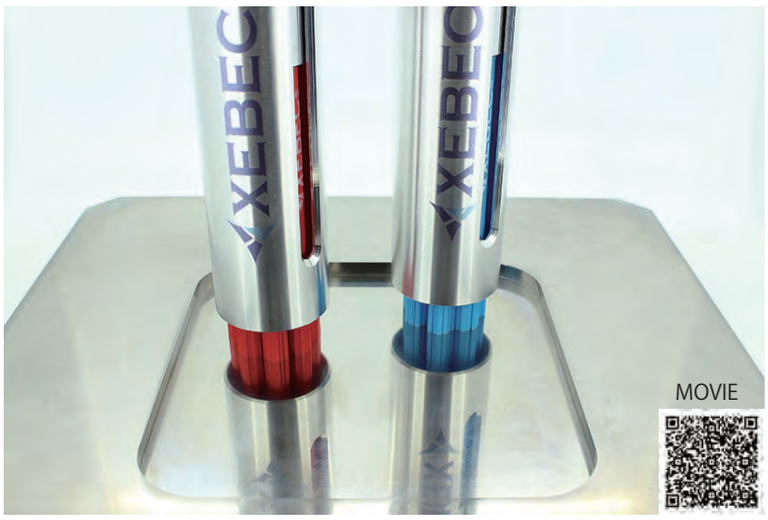
XEBEC® BEAUTIFUL DEBURRING

Applications

SUS mold



MOVIE

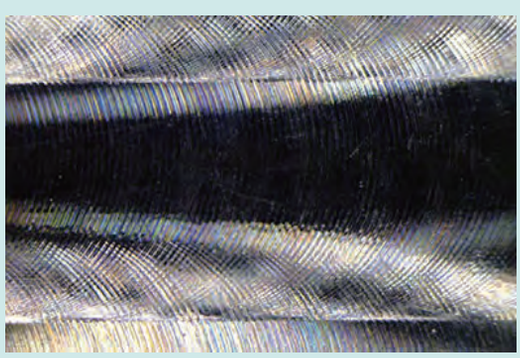
Workpiece information

Industry	Mold
Part name	SUS Mold
Material type	SUS304
Cutting process	End mill processing

Processing conditions

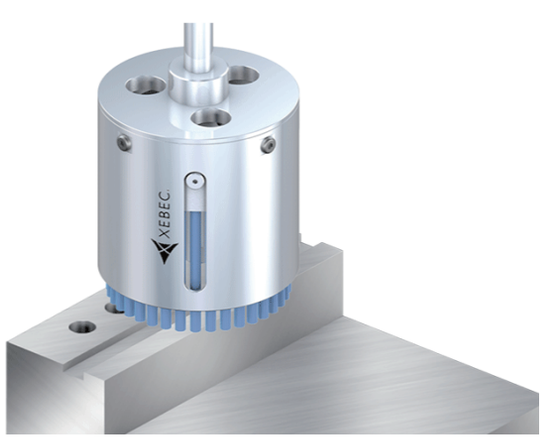
Tool	XEBEC Brush for Surface (A31-CB25M+A11-CB25M)
Processing detail	Removal of cutter marks and polishing after end milling process Tool used ：A31-CB25M, Rotation speed ：3200min $^{-1}$ Feed ：1500 mm/min, Depth of cut ：0.1mm and Tool used ：A11-CB25M, Rotation speed ：4000min $^{-1}$ Feed ：6000 mm/min, Depth of cut ：0.3mm
Spindle Speed (min $^{-1}$)	3,200
Table Feed (mm/min)	1,500
Depth of cut (mm)	0.1
Machining time (sec)	81

Before



After

Tool	XEBEC Brush for Surface (A31-CB25M+A11-CB25M)
Result	Surface roughness improved from Ra 0.21 μm, Rz 1.56 μm to Ra 0.03 μm, Rz 0.35 μm respectively.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool　XEBEC Brush ™ Surface

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XEBEC® BEAUTIFUL DEBURRING

Applications

Vacuum forming

Workpiece information

Industry	Mold
Part name	Vacuum forming
Material type	Aluminum
Cutting process	End mill processing

Processing conditions

Tool	XEBEC Brush Surface (A11-CB25M)
Processing detail	Removal of cutter marks and polishing after end milling process
Spindle Speed (min $^{-1}$)	3,600
Table Feed (mm/min)	4,000
Depth of cut (mm)	0.3
Machining time (sec)	—

Before

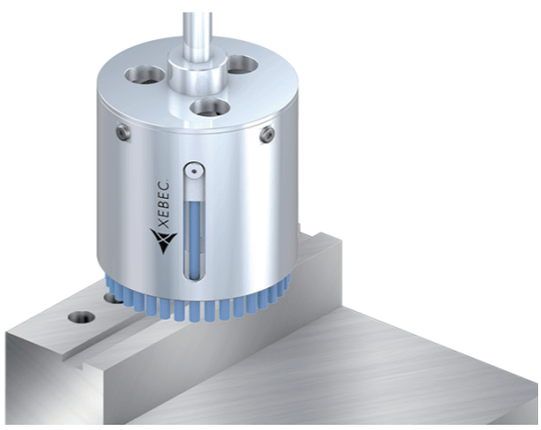
Tool: Sandpaper

Problem: It was necessary to use multiple types of abrasive papers and it took long time for polishing. Additionally, manual deburring process caused unstable finish quality.

After

Tool: XEBEC Brush Surface (A11-CB25M)

Result: Polishing in a shorter cycle time with stable quality realized.



Deburring after face-milling, end-milling and drilling
Cutter mark removal and polishing on surface

Tool XEBEC Brush ™ Surface

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Sample

Machine tools

Applications

Tool holder

Workpiece information

Industry	Machine tools
Part name	Tool holder
Material type	Iron-based
Cutting process	Face mill processing

Processing conditions

Tool	XEBEC Brush Surface (A31-CB40M)
Processing detail	Deburring the edge face after milling process
Spindle Speed (min $^{-1}$)	—
Table Feed (mm/min)	—
Depth of cut (mm)	—
Machining time (sec)	—

Before

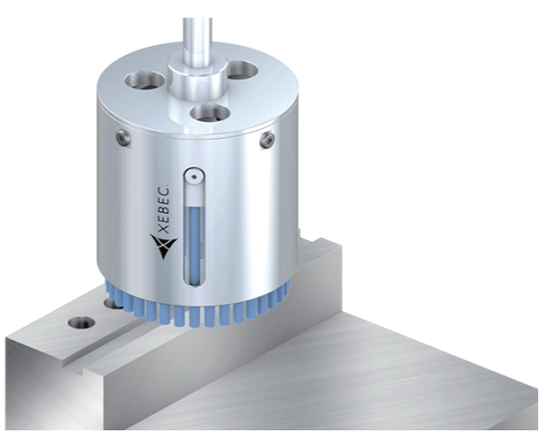
Tool: File

Problem: It took time for deburring by manual work. Resulted in unstable quality.

After

Tool: XEBEC Brush Surface (A31-CB40M)

Result: Deburring is fully automated and all the processes are completed in a machining center.



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Others

Applications

Output Shaft (Oil hole)

Workpiece information

Industry	Others
Part name	Output Shaft (Oil hole)
Material type	SCM
Cutting process	Drilling

Processing conditions

Tool	XEBEC Back Burr Cutter and Path (XC-28-A +α)
Processing detail	Back deburring after drilling
Spindle Speed (min^{-1})	12,500
Table Feed (mm/min)	1,000
Depth of cut (mm)	—
Machining time (sec)	—

Before

Tool — Back deburring tools (cotter pin type)

Problem — Poor deburring performances such as remained burrs, secondary burrs and uneven edges.

After

Tool — XEBEC Back Burr Cutter and Path (XC-28-A + special path)

Result — Uniform deburring amount without secondary burrs realized by high quality CNC deburring.

Deburring after drilling

Tool　XEBEC Back Burr Cutter and Path™

Perfect for deburring both front and back of a drilled hole

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XEBEC® BEAUTIFUL DEBURRING

About XEBEC

Beautiful deburring

Since 2002, XEBEC has been assisting machine workshops around the world in CNC deburring.

Today, we are challenging to minimize lead time which takes to solve deburring problems as close to zero by making the best of our knowledge and experiences.

“Change the myth of deburring and enhance the value of the finishing process. ”

“Creating the world where people can use their talent in creative fields.”

This is what XEBEC will strive for.

XEBEC’s 3 innovations

Technology Innovation	In order to provide essential and overwhelming solutions, we will continue technological innovation through the integration of scientific technologies, from material to software and hardware.
Process Innovation	We will continue to offer the best and innovative methods beyond the established concepts for all business processes such as marketing, manufacturing, sales and delivery.
Precision Management	We will continue to focus on quality and precision management in all aspects, including consistent product quality, shipping accuracy and swift and careful customer support.

Corporate Outline

Corporate Name	**XEBEC TECHNOLOGY CO.,LTD.**	President & CEO	**Norihiko Sumiyoshi**
Incorporated	**June 3, 1996**	Location	**Head Office** Fuerte Kojimachi 1･7 Building 8th floor, 1-7-25 Kojimachi, Chiyoda-ku, Tokyo, 102-0083, Japan
Business area	**Development, manufacturing and sales of industrial deburring and polishing tools**		TEL.+81-3-3239-3481 FAX.+81-3-5211-8964
Capital	**99 million Japanese Yen**		

History

Oct. 2017
Multi-language website was released.

Mar. 2017
"Deburring Productivity Day" was established.
(Certified by Japan Anniversary Association)

Oct. 2016
"XEBEC Brush™ Wheel Type" was released.

Oct. 2016
"XEBEC Back Burr Cutter and Path™" was released.

Oct. 2015
"XEBEC Self-Adjusting Sleeve™" was released.

Nov. 2015
"XEBEC Plus Engineering Center" was established in Okazaki City, Aichi Pref.

Apr. 2015
"Mobile Micromotor System" was released.

Mar. 2015
Awarded the "Diversity Management Selection 100 of the year 2014" by the Ministry of Economy, Trade and Industry

Jun. 2014
"Deburring University" was established.

May 2014
The headquarters were moved to 1 Chome, Kojimachi, Chiyoda-ku, Tokyo.

Apr. 2013
"XEBEC Brush Length Adjustment Tool™" was released.

Jun. 2013
"XEBEC Plus R&D Center" was established in Ota-ku, Tokyo.
Vertical Machining Center was introduced. (Additional 1-axis mounted)

Oct. 2010
"XEBEC Floating Holder™" was released.

Aug. 2012
SCARA robot was introduced at the head office for carrying out test cuts.

Oct. 2008
"XEBEC Stone™ Mounted Point" was released.

Oct. 2007
Norihiko Sumiyoshi assumed as the president and CEO.

Nov. 2004
"XEBEC Brush™ Crosshole" was released.
"XEBEC Stone™ Flexible Shaft" was released.

Apr. 2002
"XEBEC Brush™ Surface" was released.

May 1998
"XEBEC Ceramic Stone™ Meister Finish" commenced in earnest.

Jun. 1997
Certified as an authorized corporation by the Ministry of Economy, Trade and Industry under the Act on Temporary Measures for Facilitating Specific New Business.

Jun. 1996
XEBEC TECHNOLOGY CO.,LTD was incorporated.
Founder Takehiko Sumiyoshi

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XEBEC®
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SEF Meccanotecnica srl
40050 Funo - Bologna - Italy
via degli Orefici - Centergross - blocco 26
tel +39 051 6648811
vendite@sefmeccanotecnica.it
sefmeccanotecnica.it