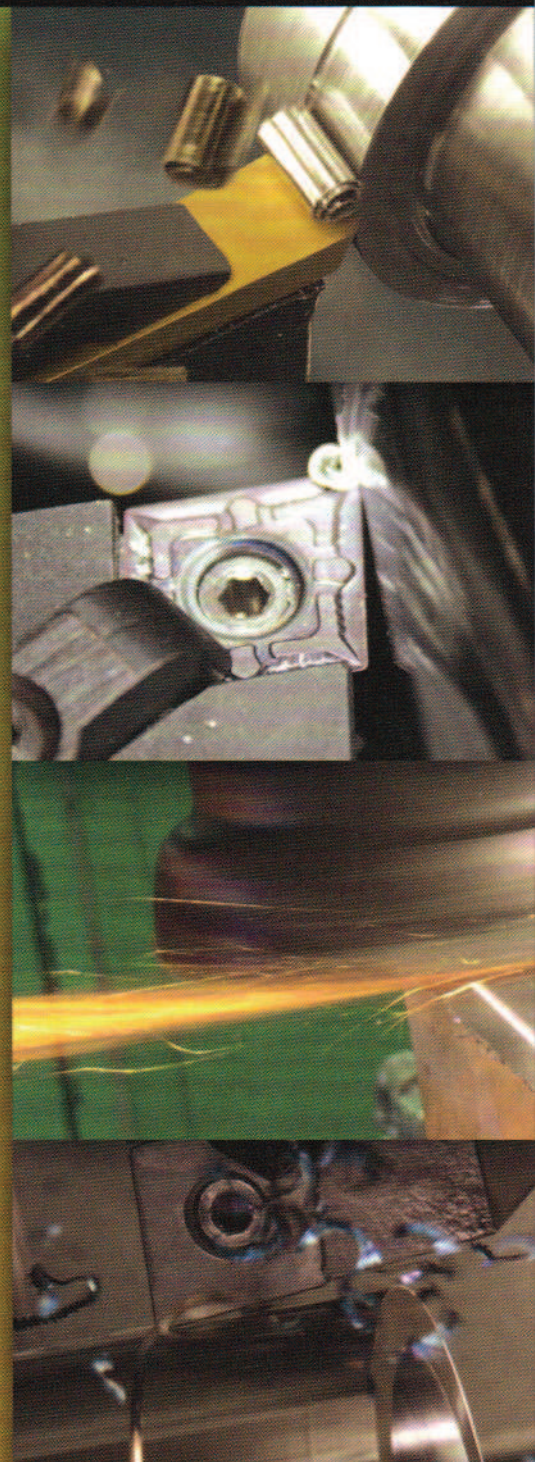




Greenleaf®

PRODUCT GUIDE

METALCUTTING TOOLS AND SYSTEMS



Greenleaf®

ADD TO CART 

www.greenleafglobalsupport.com





Greenleaf®



MADE IN THE USA

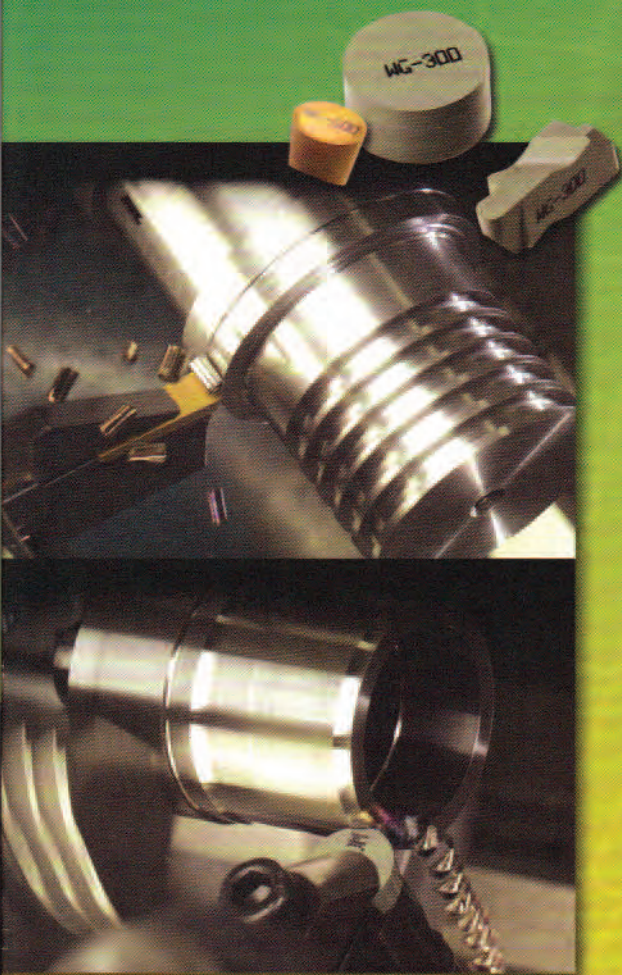
Greenleaf Corporation is a leading developer of cutting-tool technology. We specialize in the manufacture of high-performance tungsten carbide and ceramic inserts as well as innovative tool-holding systems. **Greenleaf continues to build on 65 years of innovation.** We center on supplying customers with productive solutions to every metalcutting need.



Circa Late 1950s



Circa 2008



WG-300® / WG-600® THE WORLD'S MOST PRODUCTIVE WHISKER-REINFORCED CERAMIC INSERTS

WG-300® is extremely successful at machining hard materials such as hard steels and nickel- and cobalt-based super alloys. It offers excellent wear and shock resistance at high surface speeds.

WG-600® has the advantage of offering 2-3 times longer tool life over uncoated whiskered ceramics. WG-600® excels at machining high-strength alloy materials, hardened steels and other difficult to cut materials.



Ceramic Inserts

Greenleaf is the industry leader in the development and manufacture of ceramic and coated ceramic inserts in ANSI standard and special geometries.

WG-300®

- Whisker-reinforced Al_2O_3 ceramic for machining nickel- and cobalt-based super alloys and hard steels
- Excellent thermal and shock resistance at very high surface speeds
- First choice worldwide for milling, grooving and turning difficult-to-cut, non-ferrous materials

WG-600®

- Coated whisker-reinforced Al_2O_3 ceramic for machining nickel- and cobalt-based super alloys and hard steels
- Excellent thermal and wear resistance at very high surface speeds
- Extended tool life over uncoated whisker-reinforced ceramics

U.S. Patent No. 6,447,896 B1

WG-700™

- New whisker-reinforced Al_2O_3 ceramic substrate featuring improved toughness and unique high-speed coating
- For machining nickel- and cobalt-based super alloys and other difficult-to-machine materials
- High metal-removal rates with exceptional tool life

HSN100

- Silicon nitride ceramic for turning and milling of iron
- Ductile, malleable, nodular and other difficult-to-machine irons
- Offers superior toughness and high cutting speed capabilities

HSN200

- Coated silicon-nitride ceramic for turning and milling of ductile, malleable, nodular and other difficult-to-machine irons
- Superior toughness, long tool life and excellent surface finish at high cutting speeds

CSN100

- Cold-pressed silicon nitride for turning high-speed gray cast iron
- Available with Greenleaf's DCS insert clamping system in 80° diamond and square inserts

GEM-7™

- $\text{Al}_2\text{O}_3 + \text{TiC}$ composite ceramic for turning
- Roll turning and hard alloy (up to 65 R/c) machining
- Resists notching and has a great degree of tool-wear predictability

GEM-19™

- Offers high abrasion wear resistance and moderate strength
- For use in areas where interruptions, impact or high hardness are not factors

Special Inserts

- Custom geometries are available in the grade that best suits your specific needs



Carbide Inserts

Greenleaf offers a comprehensive line of carbide inserts ranging from sub-micron C-1 through C-8 classifications. Carbide inserts are available in ANSI standard geometries with multi-purpose chipbreakers for heavy roughing through finishing.

G-20M

- Uncoated sub-micron carbide for turning and milling high-temp alloys, titanium and stainless steel
- Resists edge wear and notching when machining abrasive material

G-915

- PVD-coated carbide for turning and milling high-temp alloys, stainless steels and low-carbon steels
- Allows moderate to high feed rates in turning and milling

G-925

- PVD-coated sub-micron carbide for turning and milling high-temp alloys, titanium and stainless steel
- Resists notching and deformation at moderate to high cutting speeds

G-935

- PVD-coated carbide for milling and turning a wide range of steel and select stainless steel
- Increases speed capabilities and wear resistance

G-955

- PVD-coated carbide for milling and turning of forged and cast steels
- Excellent toughness and abrasion resistance

GA5023

- MT-CVD coated carbide for turning and milling cast iron
- Roughing and finishing of gray iron, ductile, nodular and other alloyed irons
- Specifically developed for abrasive wear and shock resistance

GA5025

- MT-CVD coated carbide for turning carbon and alloy steels as well as selected stainless steels
- Developed for turning, light roughing and finishing

GA5026

- MT-CVD coated sub-micron carbide for high-speed turning nickel- and cobalt-based super alloys, stainless steels and refractory metals
- Exceptional resistance to notching and deformation

GA5035

- MT-CVD coated carbide for turning a broad range of steels and selected stainless steels
- Resists heat deformation, thermal shock and abrasion

GA5036

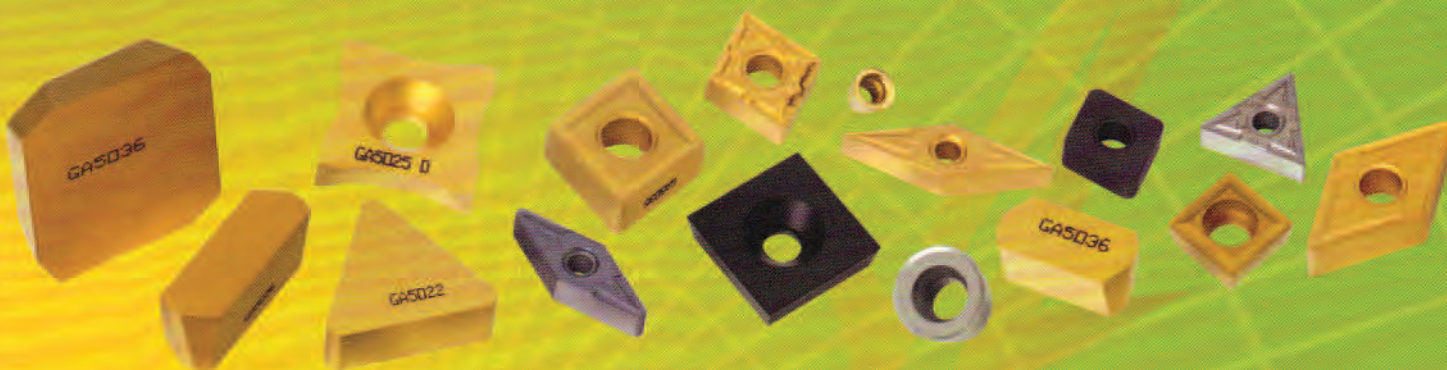
- MT-CVD coated carbide for high-speed milling of forged and cast steels and selected ductile irons
- The coating's heat resistance makes it suitable for milling at high speeds

GA5040

- MT-CVD coated carbide for milling and turning carbon steel, alloy steel, stainless steel and cast iron
- A general-purpose grade that resists mechanical shock

GA5125

- MT-CVD coated carbide for milling alloy steels
- Excellent resistance to abrasion, crater wear, thermal shock, deformation and edge build-up



Excelerator® Milling Cutters

Versatile cutters designed to accept carbide or ceramic inserts.

BALL NOSE

SIZE RANGE: 3/8" - 1" (10mm - 25mm)

Our ball nose end mills are the **only ball nose cutters designed to use ceramic and carbide inserts in the same qualified cutter bodies.** Combined with our WG-600® ceramic and G-925 carbide inserts, the unique cutter geometry offers better performance, longer tool life and superior cutting action over competitors' mills across a wider spectrum of materials.

XF EXTREME FEED

SIZE RANGE: 1" - 12" (25mm - 315mm)

Always on the cutting edge of productivity, Greenleaf engineered the Excelerator® XF milling cutter system. **The Excelerator® XF is designed for high-feed milling on a wide variety of materials including hard steels and high-temp alloys** using Greenleaf's advanced ceramic and carbide inserts

FACE MILLS

SIZE RANGE: 2" - 12" (50mm - 315mm)

High-velocity cutters with ceramic inserts for use in a variety of materials at high speeds and accelerated feed rates.

Greenleaf cutters have been engineered to offer outstanding performance with ceramic inserts at elevated spindle speeds on the most demanding materials. Precision nests provide multiple insert configurations and body protection.

END MILLS

SIZE RANGE: 3/8" - 2-1/2" (10mm - 63mm)

High-velocity cutters with ceramic inserts for use in a variety of materials at high speeds and accelerated feed rates. **Greenleaf's end mills are designed for high-performance milling in difficult to machine materials.** Utilizes indexable inserts and offers secure insert clamping.



Standard Milling Cutters

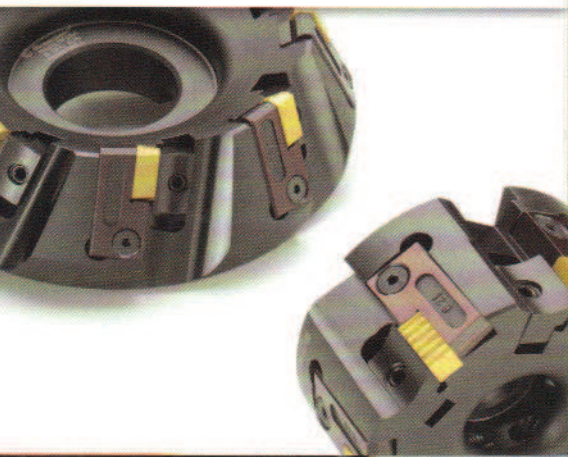
Versatile cutters designed to accept carbide or ceramic inserts.



HUSHCUT®

Series II Screw-On Insert Cutters

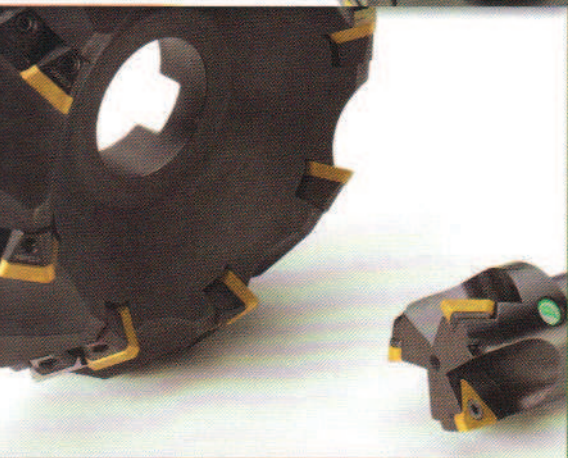
Quiet and free-cutting mills. The screw-on insert design makes the most of available horsepower and improves tool life. Provides excellent finish and utilizes all four insert corners.



POWERMILL®

Cutters

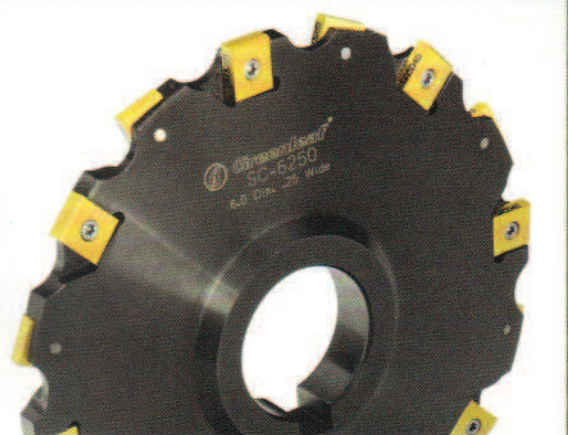
Ideal for heavy-duty cutting in severe interruptions and uneven surfaces. Replaceable components maximize cutter life while providing deep depths of cut. Available as face mills and sinusoidal.



HIGH SHEAR

Cutters

Produce excellent surface finish and material removal rates on a variety of materials. End mills offer a protected screw-on insert pocket design.



SLOTTING

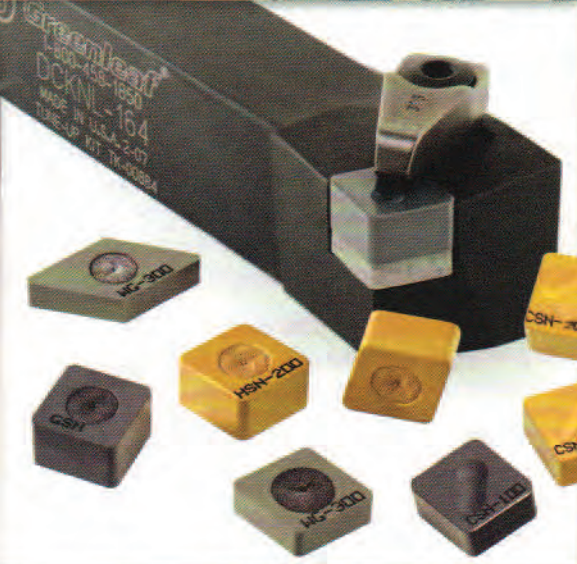
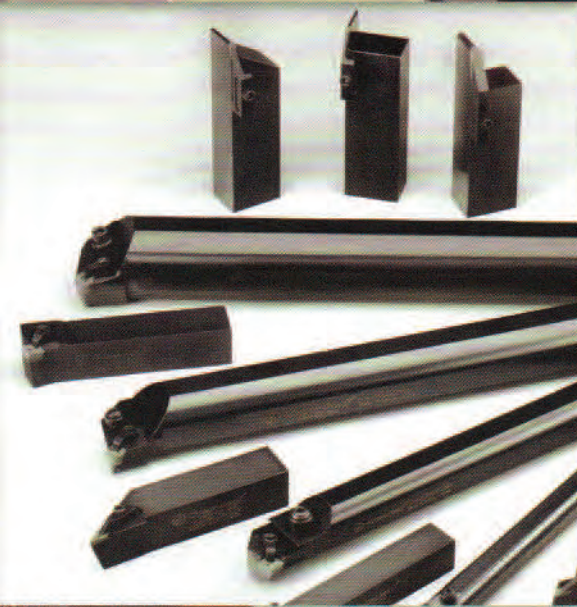
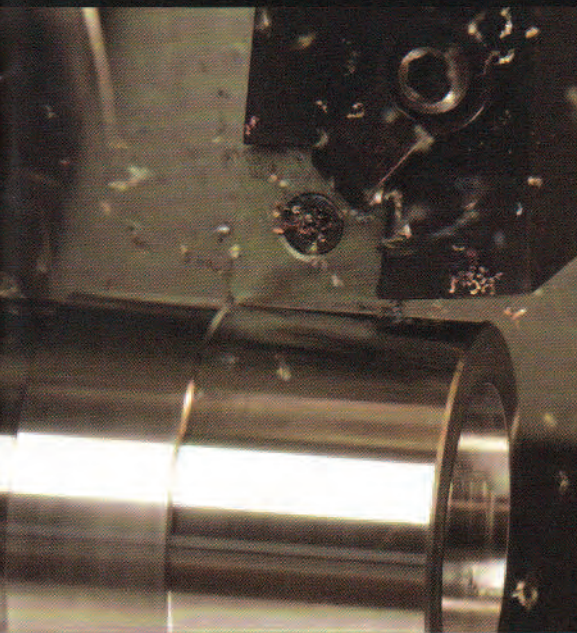
Cutters

Standard screw-on and mechanically held indexable slotting cutters.

- Powerslot® II – adjustable-width slotter
- Narrow-width slotter

Turning & Boring

Industry-standard turning and boring tools engineered for maximum productivity and tool life.



- For heavy roughing to finishing operations
- ANSI/ISO qualified
- Available in a selection specially designed to optimize the use of ceramic inserts
- Available in a wide variety of styles for all common insert geometries

TOOLHOLDERS

Greenleaf manufactures a complete line of industry standard tool holders in conformance with ANSI specifications for carbide inserts.

Greenleaf's toolholder systems for use with ceramic inserts are based upon industry standard hardware. However, geometry and pocket depth are designed to maximize ceramic performance.

BORING BARS

Greenleaf's boring bar systems and cartridges are designed around industry standard hardware. **This gives complete interchangeability with other tooling components and minimizes spare parts.** Greenleaf can supply heavy metal or "No Chat" high-density tungsten alloy bars that can reduce, and sometimes eliminate chatter for those applications that require a longer reach.

DCS AND ROUGH STUFF®

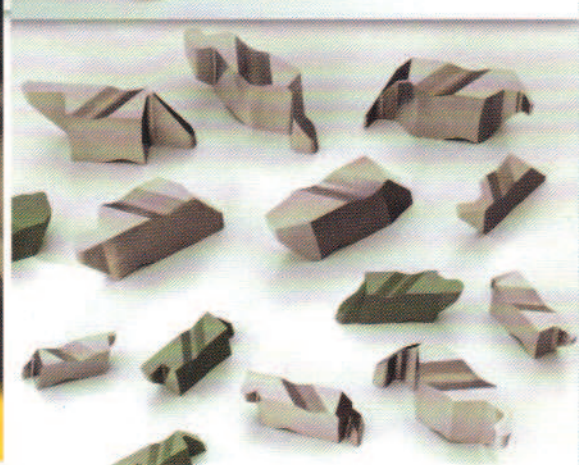
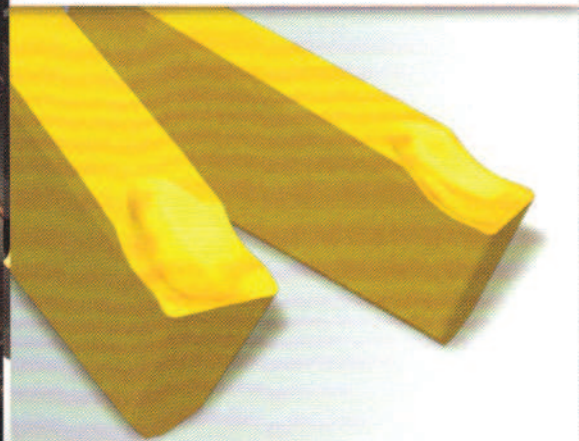
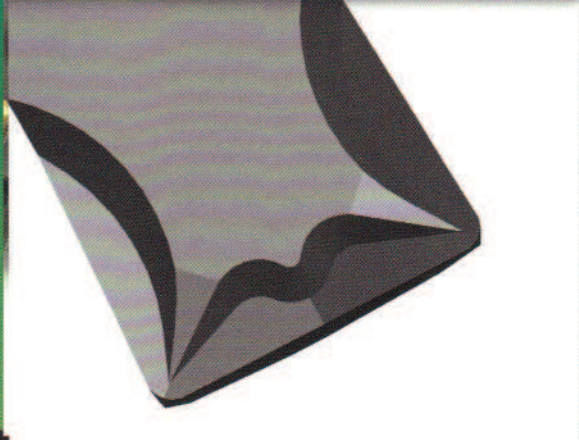
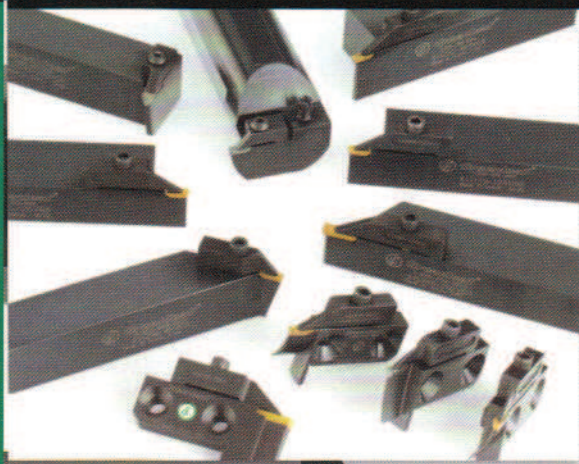
Greenleaf's Directional Clamping System features a unique system where the insert and clamp work together to provide maximum stability of the insert in the pocket of the tool holder.

Greenleaf's Rough Stuff® Surface Treatment greatly improves insert-gripping power for greater accuracy, speed and pocket retention. **Available on WG-300®, WG-600®, HSN-100 and HSN-200 ceramics.**

U.S. Patent No. 6,712,564 B1

Grooving, Profiling and Cut-Off

One of the most comprehensive systems in the industry.



COMPLETE SYSTEM

Greenleaf's toolholder system for grooving, profiling and cut-off applications is designed to accept carbide or ceramic inserts.

The system features a "V"-bottom pocket design for superior insert stability and precision cutting. An interchangeable support-blade system includes Capto and KM quick-change shanks.

GTS

Groove Turn System

GTS inserts offer high-speed performance in a chip form geometry specifically designed to allow the Greenleaf carbide grooving insert to double as a turning tool when the application dictates.

GTS carbide inserts are qualified to fit into the same pocket as its standard ceramic groover counterpart.

COS

Cut-Off System

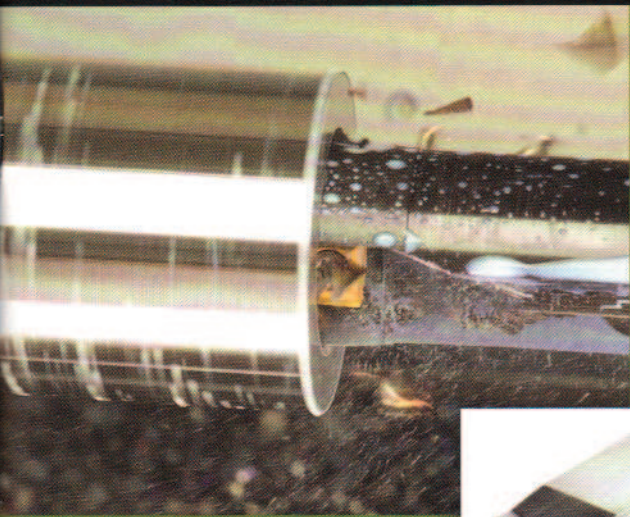
Greenleaf's advanced cut-off system features inserts that are qualified to fit into standard Greenleaf grooving tools while maintaining superior performance.

POWERLOCK®

Grooving and Threading Inserts

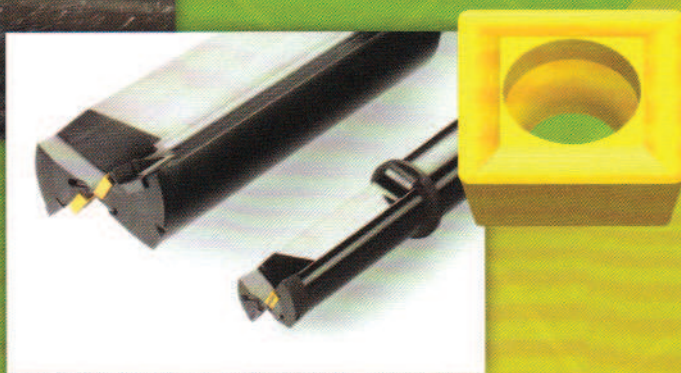
Industry standard hardware for threading or grooving using either ceramic or carbide inserts. Standard ACME and 60°V threading and grooving systems available including the Powerlock® clamping system. Special threading inserts are also available.

Indexable Drilling

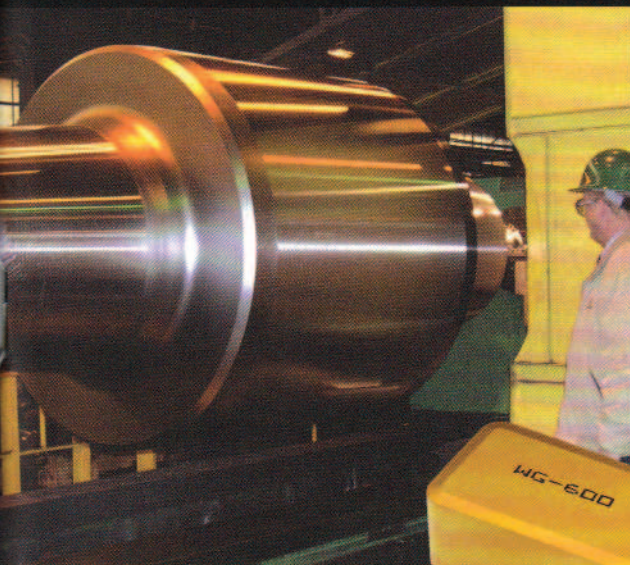


HOLEMILL™ SYSTEM

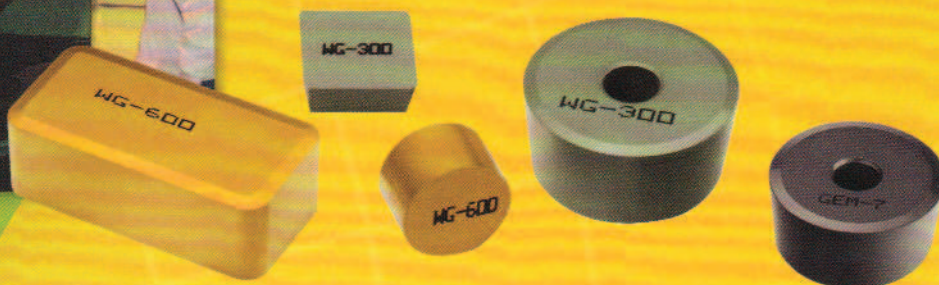
An indexable drill utilizing Greenleaf's advanced coated-carbide grades for higher speeds, quieter cutting, longer tool life and reduced horsepower consumption. Available in .937"–3" (24mm – 40mm) diameters



Heavy Turning



Greenleaf has extensive experience in the design and manufacture of heavy-turning tooling systems. These systems are extremely productive in heavy-turning applications with both carbide and ceramic inserts.



Tube Scarfing

Longer tool life, fast changing of tooling, indexable inserts.



GA5025

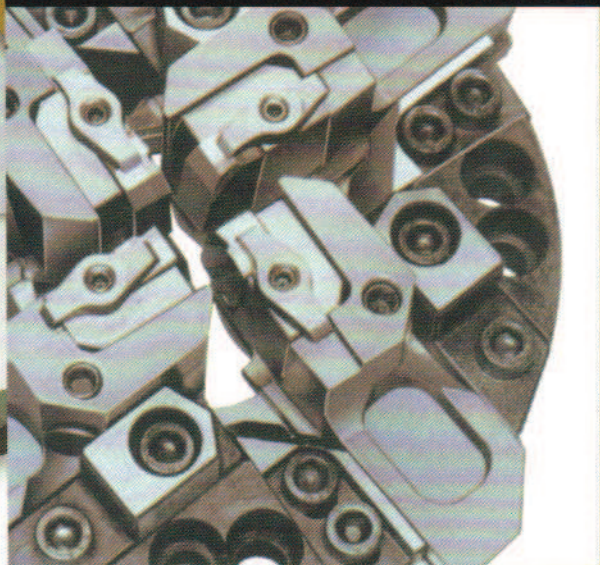
- MT-CVD ceramic-coated grade
- Superior heat resistance and long tool life

GEM-19™

- Al₂O₃ ceramic grade
- For high-speed operations
- For demanding finish requirements

Tube scarfing systems from Greenleaf using our indexable inserts offer decreased downtime, longer tool life, faster tool change time, decreased tool costs and elimination of regrinding problems. Superior seams can be achieved since an accurate radius form is always available on each side of the insert.

Bar Peeling

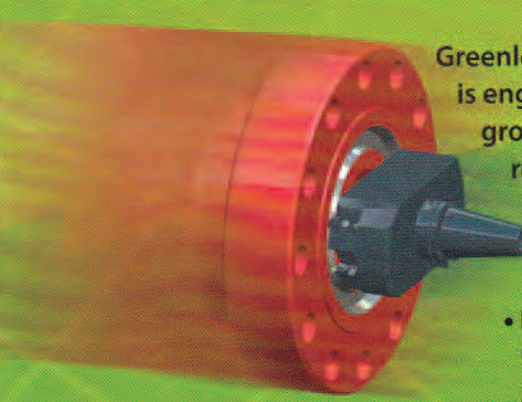


Utilizing advanced 3-D modeling and CNC manufacturing equipment, Greenleaf can provide a bar peeling solution from the machine spindle through the cutting tool insert. A complete tooling system engineered to meet your requirements.

- Daisho
- Kieserling
- Medart/Blaw Knox
- Hetran

Ring Max™ Ring-Groove Cutter

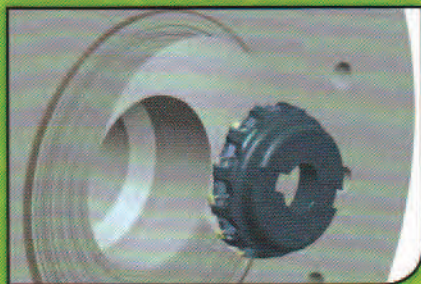
A complete ring-groove tooling solution.



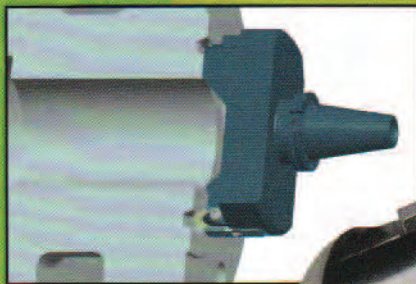
Greenleaf's Ring Max™ line of ring groove tooling is engineered to cut machining time of API ring grooves. Combined with our WG-300® whisker-reinforced ceramic inserts, Ring Max™ tools can reduce cutting time from 30 minutes or more to less than one minute.

- Finishes API ring grooves in Inconel 625 overlay in less than one minute
- Creates industry-standard API grooves including BX, R and RX styles
- Adjustable and replaceable cartridges designed for easy maintenance
- Groove and chamfers are simultaneously machined in one operation

A ONE-TWO PRODUCTIVITY PUNCH...



A Greenleaf Excelerator® Mill is used to face mill the groove surface.



A Greenleaf Ring Max™ cutter plunges and chamfers the groove.

There's a Greenleaf high-performance insert grade for every ring groove need...

- WG-300® whiskered ceramics for Inconel 625 clad overlay
- Carbide grade G-915 for stainless steel
- Carbide grade GA5036 for alloy steel



Aerospace



Greenleaf designs and manufactures tooling solutions for the unique problems common to manufacturing jet engine components. High-nickel alloys, stainless steels and titanium alloys are all part of our daily challenges.

Most of the world's commercial and military jet aircraft soar on turbine engines machined with Greenleaf's advanced cutting tools and toolholding systems.

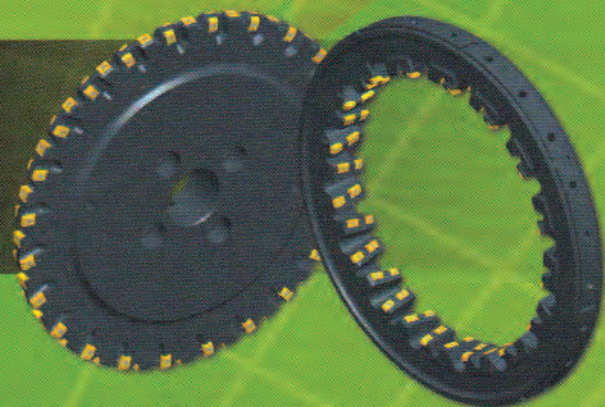


Crankshaft Milling



Photo courtesy of Ohio Crankshaft Company

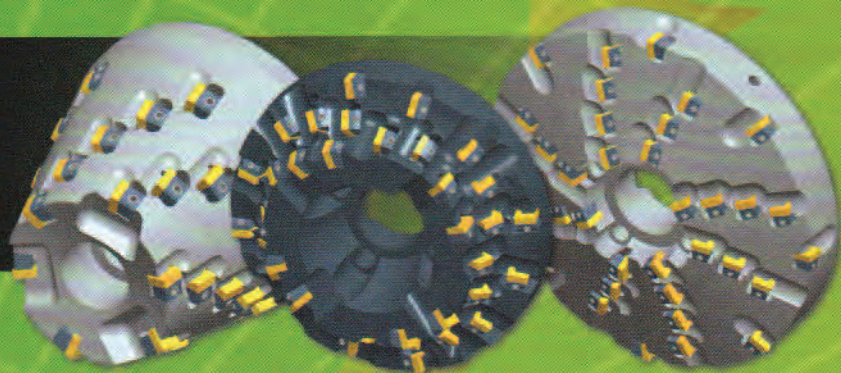
Greenleaf's industry-leading crankshaft milling cutters are manufactured to exacting engineering standards. Greenleaf utilizes a segmented cutter system designed to maintain precision tolerances required on heavy-duty crankshafts and camshafts. Coupled with Greenleaf's rugged, high-performance carbide grades, these cutters are the ultimate solution to machining large crankshafts.



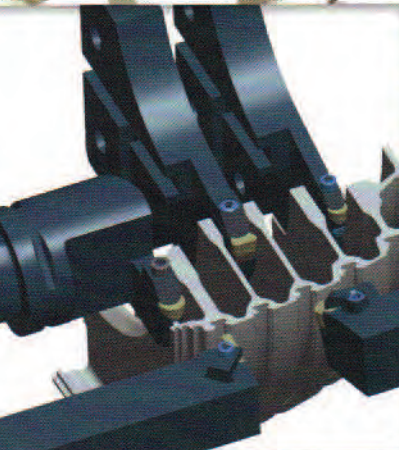
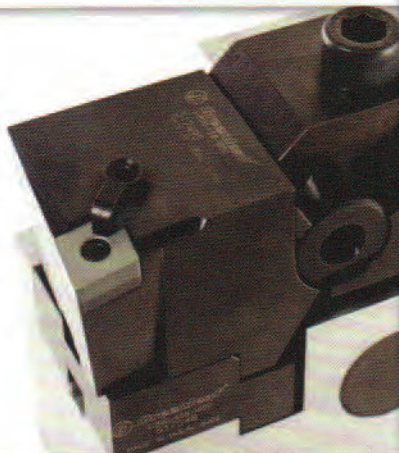
Rail Milling



The tough demands of rail, frog and switch milling are met with Greenleaf's heavy-duty rail milling cutters and inserts. Rugged cutters designed for maximum durability and productivity combined with carbide grades optimized for high manganese steel milling will provide the outstanding performance required for rail track machining operations.



Special Tooling



Special tooling is a visible strength of the Greenleaf product line. Customers from around the world utilize the Greenleaf engineering service to address their specific and often complex requirements.

- Reduce redundant tooling
- Dramatically increase productivity
- Solve machining problems

MILLING CUTTERS

Greenleaf Corporation offers a host of solutions for specialized milling needs. From high speed milling to micro adjustable cutters Greenleaf has the solution.

SPECIALTY INSERTS

Greenleaf's vast experience in the tooling industry along with cutting edge design technology allows us to design specialty inserts for maximum productivity in demanding applications.

TOOLHOLDERS

When standard tooling won't do, let our engineers design tooling for your specific needs.

COMPLETE SPECIAL TOOLING PACKAGES

With special engineering abilities and experience Greenleaf can offer complete special tooling solutions customized for performance and production efficiency.

Global Support Center



Greenleaf's Global Support Center is the most comprehensive online source for purchasing Greenleaf cutting tools and components. There are over 15,000 items from which to choose. In addition, you have immediate access to the technical information you need to run Greenleaf's advanced cutting tool products to their fullest potential.

www.greenleafglobalsupport.com



MADE IN THE USA

Greenleaf Corporation
is ISO 9001 Certified.



Greenleaf®

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