KENNAMETAL®

TURNING METAL INTO INNOVATION SINCE 1938

TURN UP THE INNOVATION

Kennametal's dedication to innovation and quality has made it a leader in turning tools, continuously pushing the boundaries of materials science and machining technology. Since its founding in 1938 by metallurgist Philip M. McKenna, the company has revolutionized metal cutting, especially with turning tools, enhancing their speed, durability and efficiency. This breakthrough not only transformed the machining industry but also established Kennametal as a leader in turning tool technology, delivering advanced solutions for the most challenging environments in manufacturing today.

MAKING THE GRADE

We develop and manufacture advanced CVD and PVD coated grades that are continuously at the forefront of the turning industry.

KENNAMETAL'S HISTORY OF FIRSTS CVD COATINGS

1972 **KC75**
Coated Grade (TiC)

1980 **KC850**
Coated Co Enriched Grade (TiC/TiCN/TiN)

1980 **KC910**
Al_2O_3 Coated Grade (TiC- Al_2O_3)

1983 **KC950**
Al_2O_3 Coated Enriched Grade

1989 **KC990**
Alternating Al_2O_3 Coated Grade and Use of (H_2S)

1994 **KC9010**
Enhanced Al_2O_3 Coated Grade

1996 **KC9120**
MT-TiCN/Al_2O_3 Coated Grade

1999-2005 **KENNA PERFECT™**
KC9 Series Enhanced MT-TiCN/Al_2O_3 Coated Grades

2005-2008 **Beyond™ Series KCP, KCK, KCM**
Post-Coat Treatment to Improve Coating Strength

2012 **Beyond™ Drive™ B Series KCP, KCK, KCM**
Bronze TiOCN Top Layer for Improved Wear Identification

2022 **KCP25C KENGold™**
Coating Technology

KENNAMETAL'S HISTORY OF FIRSTS PVD COATINGS

1985 **KC710**
First TiN Coated Carbide Grades (KC710, KC720, KC730, KC740)

1990 **HT**
First Generation Cermet Grades (HT2, HT5, HTX)

1997 **KT315**
First TiN/TiCN/TiN PVD Coated Cermet Grade

1998 **KC7310**
First PVD TiAlN Coated Carbide Grade

2003 **KC5010/ KC5025**
AlTiN Coated Grade for Difficult-to-Cut Materials

2005 **KC5410**
TiB_2 Coated Grade Non-ferrous Alloys

2008 **KB5610**
AlTiN Coated PcBN for Hard Materials

2011 **KCU10/KCU25**
Universal Turning Grade with Nano-composite Layer

2015 **KBH10/20B**
Gold Colored PVD Coating for PcBN

2019 **KCS10B**
AlTiN Coating made by High-PIMS Technology

2022 **KYHK15B**
First PVD Coated Ceramics

2023 **KCU10B/ KCU25B**
KENGold PVD, Universal Turning Grade

THE KENGold EFFECT

Advanced coating technologies are critical for manufacturing, driving significant improvements in tool performance, durability and efficiency. Kennametal's introduction of the multilayer KENGold coating in both Physical Vapor Deposition (PVD) and Chemical Vapor Deposition (CVD) meets the demands of next generation technologies.

KENGold™

A CLOSER LOOK AT KENGold CVD AND PVD

- Designed to resist wear, extending tool life and performance
- Strong thermal barrier helps maintain tool integrity under high-temperature conditions
- Improves toughness of the tool edges, making them more durable and reliable
- Gold color outer layer allows for easy detection of wear, helping users identify when a tool needs to be changed
- PVD coatings form a thin coating via a physical vapor process
- CVD coatings form a thick coating via a chemical reaction

GRADES

KENGOLD COATED TURNING INSERTS

KCP25C (CVD)

- Improved MT-TiCN/Alumina CVD coated grade
- Reduces waste of unused edges by offering easy identification of worn or unused edges
- Alpha-Alumina coated layer provides a strong thermal barrier and improves crater and flank wear
- Increases output rate reliability and has consistent tool life
- For machining all steels including carbon, alloy and a variety of steels

KCU10B & KCU25B (PVD)

- Features TiSiN/AlTiSiN/AlTiN for greater thermal deformation resistance and edge wear resistance across all material groups
- Reduces waste of unused edges by offering easy identification of worn or unused edges
- KCU10B is a harder and more wear resistant grade while KCU25B is tougher
- Ideal for machining steels, stainless steels, cast iron and high-temp alloys
- Available in insert styles for ISO turning, grooving and cut-off

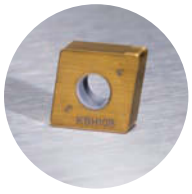
INNOVATIVE TURNING GRADES

KCS10B

- High-PIMS coating technology
- Delivers longer tool life with high depth-of-cut notching resistance
- Optimum layer adhesion for increased process reliability and sharp cutting edges
- AlTiN PVD coating ideal for difficult to machine materials like inconel, cobalt-based material, titanium and stainless steels

KYK10

- High-performance solution for cast iron materials
- Ideal for continuous and lightly interrupted cuts
- SiAlON ceramic features a 30% increased speed
- Pressed-to-size inserts for roughing and medium machining

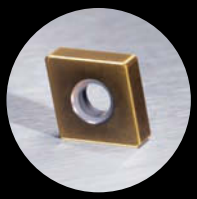


KBH10B

- Designed for the precision machining of hardened steels (>48 HRC)
- Gold coating increases wear resistance and enhances wear identification
- Suitable for continuous to lightly interrupted cutting applications
- Low content PcBN grade with proprietary binder and a PVD TiN/TiAlN/TiN coating for wear resistance and wear identification
- Ideal for several steels, carburized and nitride irons and some hard coatings

KBH20B

- Designed for precision machining of hardened steel (>48 HRC)
- Low content PcBN grade and a PVD TiN/TiAlN/TiN coating for added wear resistance and enhanced wear identification
- Ideal PcBN hard turning grade for continuous to lightly interrupted cutting applications
- Typical applications are case-hardened steel components such as gears, shafts and other drive-train components
- Gold coating increases wear resistance and enhances wear identification



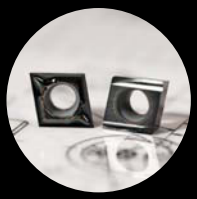
KYHK15B

- Ideal for continuous and varying depth of cuts
- Ceramic grade designed for machining hardened steel (45-58 HRC)
- Suitable for finishing cast iron and high-temp alloys
- Gold coating increases wear resistance and enhances wear identification

KYS30

- SiAlON ceramic grade optimized for high performance on heat resistant and high-temp alloys
- Machines long cutting lengths, ensuring consistent performance and durability
- Withstands high temperatures and higher cutting speeds, increasing tool life

PRECISION TOOLING AT EVERY TURN



TopSwiss™ ISO Turning Inserts

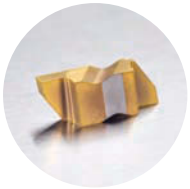
- Designed for low-feed, high depth-of-cut Swiss-type and small parts applications
- Featuring straight and curved cutting edges for increased edge strength
- Polished finishing geometries for increased welding resistance and smooth chip flow
- Wiper geometries for increased feed rates and superior surface quality

TopSwiss MBS Micro Boring

- High performance I.D. boring, grooving and threading as small as Ø0.3mm (0.012")
- Sharp cutting edges for best-in-class tool life and surface finishes
- Precision ground insert shanks for high accuracy and stability
- Nearly 200 toolholders across three levels of precision: standard, premium and high performance

Beyond Evolution™

- Grooving and cut-off tool that also performs multi-directional turning
- Triple-V seating has three points of contact for stability and minimal vibration
- Directs coolant across the top of the insert to the cutting zone underneath the chips



Top Notch™ Grooving

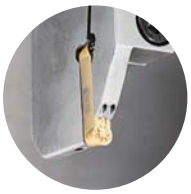
- Designed for precision and versatility in shallow grooving operations
- High stability inserts designed to handle rapid-feed applications with minimal vibration
- Clamping system securely holds insert precisely in place to eliminate movements and extend tool life
- Ideal for multiple feed direction profiling and provides highest accuracy and excellent surface finishes

Top Notch Threading

- Minimizes wear and tear while maintaining high precision
- Designed to improve machining efficiency and reduce downtime
- Clamping system securely holds insert precisely in place to eliminate movements and extend tool life
- Ideal for multiple feed direction profiling and provides highest accuracy and excellent surface finishes

Top Notch Profiling

- Precision ground inserts provide high precision indexing and lower cutting forces
- Clamping system securely holds insert precisely in place to eliminate movements and extend tool life
- Ideal for multiple feed direction profiling and provides highest accuracy and excellent surface finishes



A4 Double Ended Grooving and Turning

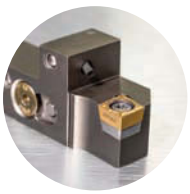
- Double ended system with superior grade and chip breaker supports high productivity
- Unique clamping design provides maximum rigidity
- Versatile system reduces machine setup time and tooling inventory

KM™ Tool Holders

- Quick-change tooling provides stability, reliability and flexibility
- Provides consistent performance and high clamping force
- Designed for static (lathe) and rotating operations
- Compatible for use with A4, Top Notch systems, ISO turning, Beyond Evolution and threading

KM™ Micro

- Designed for high-precision tasks and ideal for small parts machining
- Suitable for both internal and external turning and grooving applications
- Engineered to perform well in various materials, including high-strength steels, stainless steels and non-ferrous materials
- Modular quick-change system primarily for Swiss-type lathes, but compatible with a wide range of machines



KM Micro HPCR Clamping Units

- Dual coolant delivery system for reduced heat and enhanced chip control at the cutting edge
- KM Micro 3-point contact (1 face and 2 tapers) provides a stronger clamping connection
- Easy insert replacement with front clamp designed heads for Swiss-type lathes
- Flexible quick-change capabilities with A4, Beyond Evolution and existing cutting-head styles

CUSTOMER WINS WITH OUR PROVEN SOLUTIONS

ITD Engineering Boosts Productivity

A CNC manufacturer seeking improved machining performance reported significant wins after using Kennametal's KCP25C grade for turning. They increased production from 200 to 300 parts per edge, ran faster and harder, achieved effective chip breaking and found the inserts to be more cost effective. They even experienced twice the tool life compared to their previous solution by using this insert that "doesn't fail, it wears."

Horn Equipment Improves Cycle Times

An equipment company serving the oil and gas industry seeking improved cycle times found success with Kennametal's CNMG insert and KCP25C turning grades. Previously, facing operations required machining for approximately 2.5 minutes on the front side and 1.5 minutes on the backside, but with CNMG and KCP25C they reduced cycle times to just 15 seconds per pass.

TURNING INDUSTRIES

Grades	Aerospace	Medical	General Engineering	Energy	Transportation
KCP25C (CVD Coated)			•	•	•
KCU10B & KCU25B (PVD Coated)	•	•	•	•	•
KCS10B	•	•		•	
KYK10			•	•	•
KBH10B			•	•	•
KBH20B			•	•	•
KYHK15B	•		•	•	•
KYS30	•	•		•	

Tool Type	Aerospace	Medical	General Engineering	Energy	Transportation
TopSwiss Inserts		•	•		
TopSwiss MBS Micro Boring		•	•		
Beyond Evolution	•	•	•	•	•
Top Notch Grooving	•	•	•	•	•
Top Notch Threading	•	•	•	•	•
Top Notch Profiling	•	•	•		•
A4 Double Ended Grooving & Turning	•	•	•	•	•
KM Tool Holders	•	•	•	•	•
KM Micro		•	•		
KM Micro HPCR Clamping Units	•	•	•		

CORE CAPABILITIES IN TURNING

New Project Engineering

We work in collaboration with your engineering team and machine tool builder (MTB) to offer lean process development, full tooling packages, custom tooling designs and cost-per-part assessments.

Process Optimization

We are prepared to assist you from tool selection to application to standardization and design strategically to reduce inventory, maximize value, minimize waste and improve process flow.

Supply Chain Optimization

We can take you to the next level with best practices and premier industry equipment and software solutions for tool and supply management, reduced acquisition and possession and usage costs, creating a transparent purchase platform and increasing operational effectiveness.

Machining Strategy and Programming Support

Whether you are working on something entirely new or reprogramming an existing part, we have the technical know-how to help you improve process and productivity. Our team utilizes the latest in digital tools and CAM packages to simulate and recommend the right machining strategy for your unique needs.

Building Better with Dynamic Partnerships

Manufacturers choose to partner with us because of our established relationships, built over decades, with key customers, MTB, suppliers and original equipment manufacturers (OEM).

Global Application Support

Local MTB, OEM and suppliers count on our global application support teams and you can too. We are ready to engineer full process solutions for machining components that will change peoples' lives in more than 60 countries.

Knowledge Center Training

We provide comprehensive training for all levels of metal cutting, from novice to advanced, including application and industry-specific courses. Choose from onsite education, webinars or the online-based Certified Metalcutting Professional (CMP) program to learn more about the latest tooling methods.

KENNAMETAL LOOKING FORWARD

The future of turning and metalworking demands reaching unprecedented levels of efficiency, precision and innovation. As technology advances, it not only shapes the way manufacturing is done today, but also pushes the boundaries of tomorrow. To ensure higher productivity and greater sustainability for our customers, Kennametal remains committed to innovative research and testing industry boundaries to deliver tooling that takes your machining to the next level.

Artificial Intelligence and Enhanced CNC Capabilities

AI is revolutionizing CNC machining by enabling machines to learn and adapt to new tasks with minimal human intervention. AI-driven systems allow for machining complex operations easily and efficiently, reducing errors and improving productivity.

Digital Optimization Tools

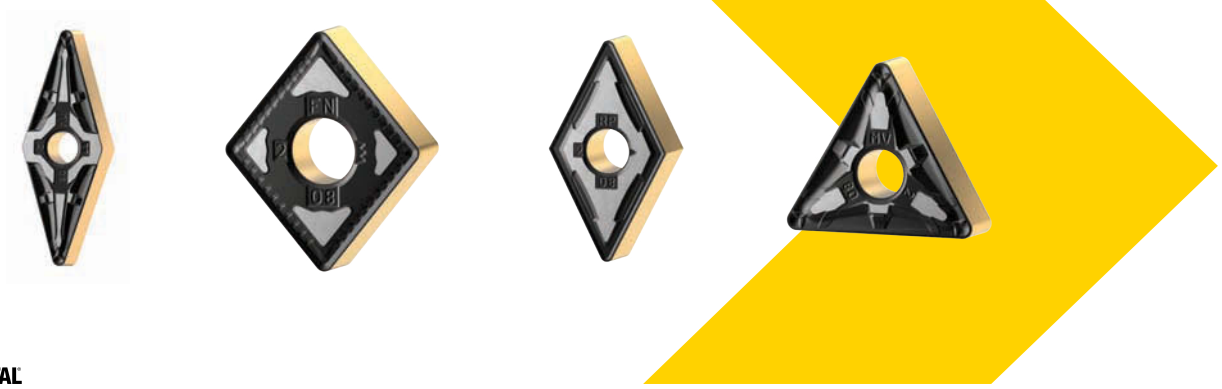
Advanced software and digital tool integration are revolutionizing turning and metalworking. Digital optimization software enables intricate planning and simulation of machining operations. These platforms help optimize tool paths, reduce setup times and enhance overall efficiency.

Real-Time Monitoring and Digital Twins

Real-time monitoring systems provide continuous feedback on the machining process, allowing for immediate adjustments. Digital twins take this a step further by creating a virtual model of the machine and its operations. This model can be used to simulate different scenarios, predict outcomes and optimize performance, leading to higher precision and efficiency.

Machine Efficiency

Sustainability is becoming a major focus in manufacturing, and turning is no exception. Energy-efficient machines such as lathes are designed to consume less power while maintaining high performance. These machines not only reduce operational costs but also contribute to an eco-friendly manufacturing environment by lowering carbon footprints.



We've Been Cutting Metal Since 1938.




Our Story Is One of Continuous Innovation

It starts in 1938 with our founder, metallurgist Philip M. McKenna, who after years of research created revolutionary tungsten-titanium carbide alloy cutting tools specifically for working with steel. That single development not only led to a new class of machining tools that cut faster, lasted longer and drove productivity in everything from the automobile to the airplane, but also led to the opening of McKenna Metals Company in Latrobe, Pennsylvania, United States. Today, that company is Kennametal Inc.—a recognized leader in metalworking serving customers across continents and industries including transportation, construction, aerospace and defense, machining and cutting, energy and general engineering. We have a reputation for building innovative solutions for our customers' most challenging applications. The name Kennametal is synonymous for high-quality, high-performance tools that can withstand the most strenuous conditions and bring ease to a wide range of machining operations. We help our customers' operations run longer, faster and with greater precision. We don't cut corners. We cut metal. Your toughest materials don't stand a chance.

KENNAMETAL®

LET'S TAKE YOUR **MANUFACTURING** TO THE **NEXT LEVEL**

kennametal.com