

## PRECISION MACHINE COMPONENTS & SYSTEMS

Innovative products and services  
for machine design, manufacture,  
rebuild and repair.

# INNOVATION IS MORE THAN A CONCEPT AT AME

It's part of our culture. We continually look for innovative new ways to improve our products and services, and you'll see the results in every corner of our organization—in our processes, our strategic alliances, our staff, and most importantly, in the high-quality, precision engineered components and machines we deliver to you.

The following pages provide a brief overview of the precision engineered components and services that are available today at AME, including:

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This overview is just a brief introduction. To learn how AME's innovative approach to precision products and machining can benefit your organization, please call or go online today.

**1-800-225-4263**

**[www.ame.com](http://www.ame.com)**



Here are some of the significant ways we've fostered a culture of innovation at Advanced Machine & Engineering (AME) for over four decades:

### **STATE-OF-THE-ART FACILITY**

AME engineers and technicians always have access to the most progressive technologies in the machining industry. Today our 133,000 square foot facility includes CNC turning machines, machining centers, boring mills, high precision grinding machines and inspection equipment to fully manufacture and validate parts of any size. We put the best tools in the right hands, which means AME can manufacture custom components to any specification.

### **REAL-WORLD EXPERTISE**

At AME, our product managers are trained engineers, so they have deep, technical understanding of how components are used in the real world, and how they need to be integrated with your machines for best results. Practical knowledge of machines and the machining industry creates a fertile environment for new ideas, fresh thinking, and true breakthroughs.

### **CONTINUOUS IMPROVEMENT**

Advanced Machine & Engineering Co. focuses heavily on continuous improvement and lean manufacturing to constantly improve its products, processes and services. We strive to always be "better tomorrow than we are today" by leveraging a well-educated and trained staff, exceptional leadership and state-of-the-art plant and equipment.

### **PROVEN PROCESSES**

As an early adopter of ISO-9001 standards, AME delivers proven, measurable quality within every work cell and on every project. We innovate within a framework of ISO compliance, and deliver precision components that meet or exceed every ISO metric.



**A CULTURE OF  
INNOVATION**



# MISSION

Advanced Machine & Engineering strives to ensure customer loyalty by supplying products and services of the highest value while sharing responsibilities in a rewarding work environment.

# VISION

Advanced Machine & Engineering is an innovative and dynamic company valued by all its stakeholders. We focus on providing engineered solutions for industry to become the supplier of choice due to the value of the products and services we provide.

# VALUES

**CULTURE** - We strive to maintain a culture of openness and ethical values.

**ASSOCIATES** - Creativity is welcomed and encouraged along with cooperation and participation.

**CUSTOMERS** - We provide value to our customers through a relentless focus on continuous improvement.

**COMMUNITY** - We will always give back to the community and those who are less fortunate than us.



## SELECTIVE PARTNERSHIPS

AME partners with some of the most advanced technology companies in the machining industry. From day one, we've looked for strategic alliances with industry leaders so we can quickly bring new capabilities to your workplace.

**TRIAG**

**SPIETH**

**SITEMA**

**OTT**  
Spanntechnik **JAKOB**

**JAKOB**  
Antriebstechnik **JAKOB**



**STOTZ**

**ODU**





## MANUFACTURED IN THE USA

Advanced Machine & Engineering Co.'s ownership and management are proud American manufacturing activists and support the reshoring initiative for U.S. manufacturing jobs. We manufacture the majority of our products right here in the heartland of America in Rockford, IL. In addition, our sister company Hennig Inc.'s Machesney Park, IL location and service centers throughout the U.S. work in unison with AME to provide complete machine tool component and machine protection products and services for the North American markets.



## GIVING BACK

Advanced Machine & Engineering Co. strongly believes in giving back to local communities. We support numerous local charities, non-profit organizations and causes in general. During 2013, AME and their sister company, Hennig Inc., collectively donated to over 65 local, national, and global charities & non-profit organizations throughout the year. Some of the organizations they support include local ones like the Rockford Rescue Mission, which receives significant and ongoing support to help prevent homelessness in the Rockford area. Others include larger national organizations like the American Cancer Society or Muscular Dystrophy Association which are dedicated to disease awareness and prevention.

## INTERNSHIP & APPRENTICESHIP PROGRAM

In addition to their donations, AME also supports the community by providing career advancement and employment opportunities through its robust internship and apprenticeship programs for engineers and machinists. Interns and apprentices get hands-on training from experts in the fields of mechanical, industrial, and electrical engineering. It's our way of ensuring manufacturing excellence for generations to come.

## ENTERPRISING SOLUTIONS FOR HIGH-STAKES MACHINING

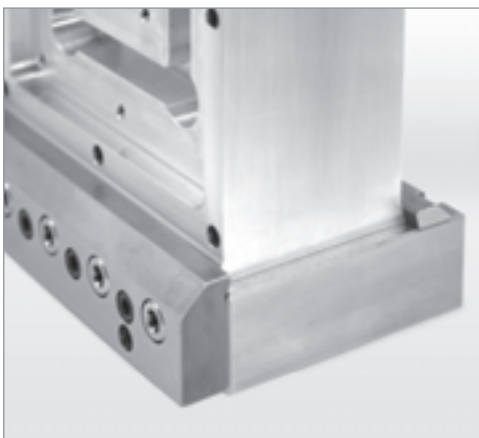
### PRECISION WORKHOLDING

AME provides cast iron and AMROK® epoxy mineral tombstones, with aluminum and steel tombstones available upon request. Tombstones are available in standard or custom configurations, from semi-finished plain face to full-grid patterns with precision bushings and threaded inserts. All steel and cast iron tombstones and plates are stress relieved to provide dimensional stability. They can be custom fit to the machining center using any point of reference including edge locator with hardened and ground wear pads, center locator, or custom specified mounting holes.

AMROK® precision tombstones are engineered to hold the industry's tightest tolerances for flatness (.0005/12 in.), parallelism (.0005/12 in.), perpendicularity (.0008/12 in.), and surface finish (63 RMS)\*. The tombstones are built then verified using AME's in-house coordinate measuring machines, so conformance of design can be verified with a full CMM report, available upon request.

AMROK® **TOMBSTONES** are available in virtually any style, including (but not limited to):

- Cubes
- Doubles Angles
- Window Frames
- Single Angles
- Cross Columns
- Octagons
- Hexagons
- Triangles
- Y Tombstones
- Plates
- Risers
- Consoles
- Angle Blocks
- Specials



AMROK® Dovetail Vice



AMROK® Cast Iron Double Angle Tombstone



AMROK® Custom Workholding



### AMFLEX® MODULAR WORKHOLDING

components are designed to fit standard tombstones and grid bases but may be utilized with other traditional workholding systems. The components are designed for optimal clamping of a wide variety of parts and can be used on a variety of machine tools.

### AMROK® EPOXY MINERAL TOMBSTONES

We now offer AMROK® brand epoxy-mineral tombstones. The newly developed material consists of quartz gravel, silica sand and crushed rock mixed with a high quality epoxy resin binding agent. Significant benefits of epoxy include a specific weight less than

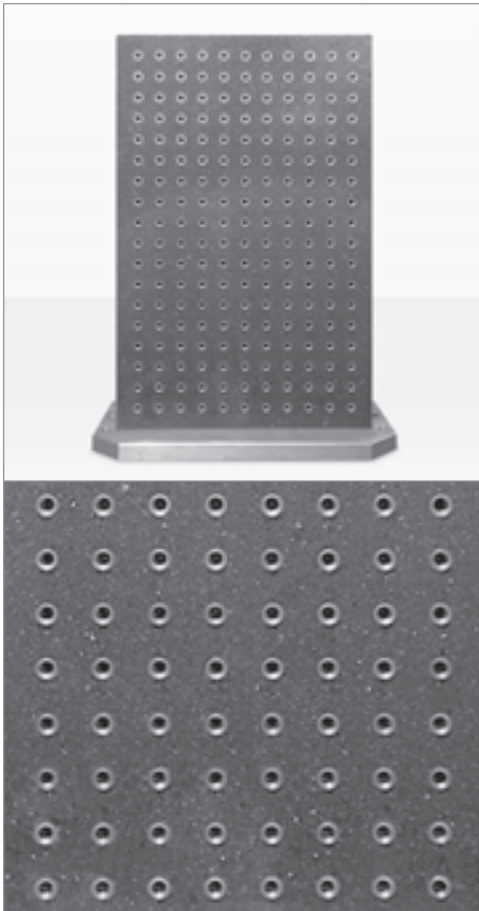
that of aluminum, but does not sacrifice the damping and thermal expansion characteristics. It's a great choice for those looking for a lightweight solution that still allows them to utilize the full envelope of their horizontal machine. AME is the exclusive supplier of epoxy-mineral tombstones in 2" grid pattern for North America.

Customized solutions are available with either molded steel plugs for tapped holes or 1/2 inch ID precision bushings and hardened threaded inserts. The material is chemically resistant to oils, alkalis, acids and coolant. Also, AMROK® epoxy-mineral tombstones offer a comparable price to aluminum.

### TRIAG MODULAR WORKHOLDING SYSTEMS

combine the characteristics and performance of a dedicated fixture in a platform that is completely modular and can be retooled as needed. TRIAG has a history of rethinking the status quo to produce innovative approaches to workholding.

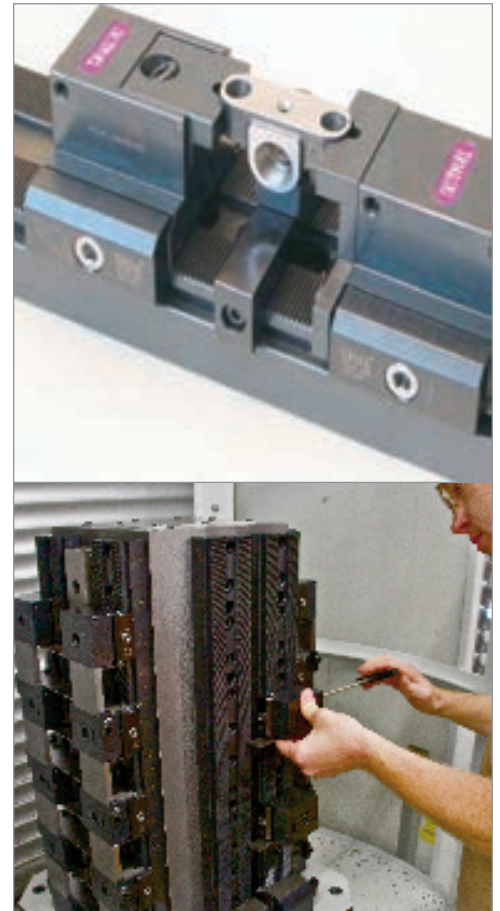
TRIAG's modular workholding systems use compactCLAMP, powerCLAMP and microCLAMP technology to hold from mid-size to very small parts in very high densities while allowing easy part change for fast retooling. TRIAG base rails mount to AME standard grids. AME is the exclusive U.S. distributor of TRIAG products.



NEW in 2014! AMROK® Epoxy Mineral Tombstone

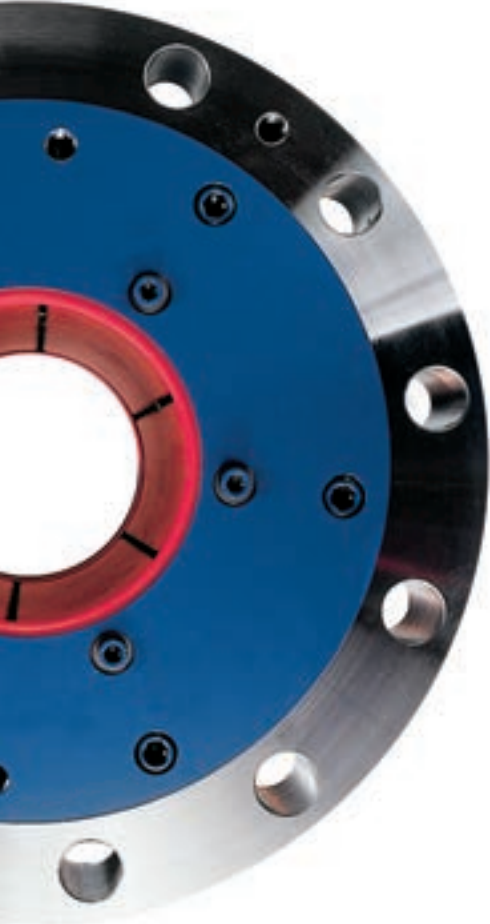


AMROK® Custom Machined Cross Tombstone (top)  
Custom Hydraulic Workholding (bottom)



TRIAG Modular Workholding Components

## POSITION HOLDING & RELIABLE GRAVITY FALL PREVENTION



**AMLOK® RCH (HYDRAULIC), RLN NFPA (PNEUMATIC) AND RLI (ISO) (PNEUMATIC) ROD CLAMPS** provide power-off clamping on rods and shafts, controlling common problems such as over travel, drift, bounce and reverse travel. The clamps are actuated by a spring mechanism and unclamped by hydraulic or pneumatic pressure. These rod clamps are designed to hold components securely in place after motion has stopped. Holding force depends on rod and piston diameter, and can be multiplied by attaching additional AMLOK® clamps to the same rod.

**NEW ISO 6431 - STYLE AMLOK® PNEUMATIC** Series RLI Rod Clamp has been developed as a solution to control problems inherent to pneumatics — over travel, drifting, bouncing and reverse traveling. The AMLOK® Power-Off Rod Clamp can be mounted to the ISO 6431 cylinder of your choice, or as a stand alone unit to be used with no cylinder at all.

**SITEMA SAFETY CATCHERS** safeguard people and machines against falling loads or tools if a hydraulic or pneumatic pressure system fails, or if a rope, chain, belt, toothed drive or other lifting member breaks. SITEMA Safety Catchers stop a falling load at any point of ascent and prevent it from crashing down. The system is ratchetless, mechanically safe and absolutely reliable. Its self-intensifying clamp design achieves a level of safety unmatched by any other technology.

**SITEMA SAFETY LOCKS** are similar to Safety Catchers but with essential differences in the attributes of the clamping system. Rather than catching falling masses, Safety Locks are used for securing horizontal and vertical drives. Holding force is initiated by springs but completed by the load itself through the system's unique self-intensifying clamp design. Available for rod diameters from 16mm to 110mm.

**SITEMA LOCKING DEVICES** are used for clamping rods in applications that require fixing against external operating forces. The energy required for the clamping action is generated by pre-tensioned springs or by hydraulic or pneumatic pistons. Release is by hydraulic or pneumatic pressure. Locking available for rod diameters from 10mm to 250mm.

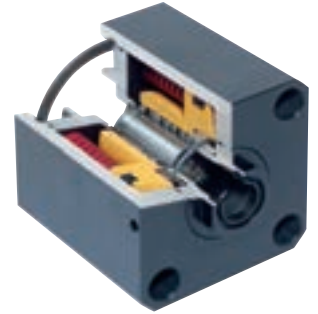
**SITEMA SAFETY BRAKES** are designed to hold a moved mass in one direction (against gravity). The mass is held to a round shaft, which could be an existing cylinder rod or a separate rod. High holding force is provided by the load itself due to the system's effective, self-intensifying clamp design. Pneumatically operated, for vertical loader axis or vertical/diagonal machine tool axes.







AMLOK® RLI and RLN Pneumatic Rod Locks



AMLOK® RCH Hydraulic Rod Lock



SITEMA Safety Catchers, Safety Locks, Safety Brakes



# PRECISION MACHINE COMPONENTS

AME machine components are precision engineered for accuracy, longevity, reliability and optimal load-carrying capacity. AME engineers can make sure you get precisely the right components for your specific application.

**SPIETH ADJUSTABLE LOCKNUTS** provide vise-like locking without washers and keys. Contact face square with threads. Inch and metric sizes available.



SPIETH Precision Lock Nuts

**SPIETH CLAMPING SLEEVES** provide keyless, shrink-fit shaft to hub connections. When axially compressed, Spieth clamping sleeves expand to provide a concentric shrink-fit connection between the shaft, sleeve and hub. Inch and metric sizes available.



SPIETH Clamping Sleeves

**SPIETH**

**AMDISK**

**AMBUSH**

**ODU**

**TH**

**AMDISK® HYDRAULIC CLAMP DISKS & RINGS** are made of a high strength bronze piston disk with a vulcanized Viton seal, enabling them to be used with any high pressure hydraulic fluid. They are offered in pressures up to 4,000 psi and diameter sizes from 16mm to 75mm.



AMDISK® Hydraulic Clamp Discs and Rings

**AMBUSH® SQUEEZE BUSHINGS** are used to clamp moving shafts to fixed housings in a wide range of applications. Designed to resist axial (ASA) and torsional (AST) forces, AMBUSH® Squeeze Bushings can operate at pressure up to 5000 PSI.



AMBUSH® Squeeze Bushings

**SPIETH HYDRAULICALLY ACTUATED GUIDE AND CLAMPING SLEEVES** allow automatic and concentric guiding and clamping of quills, shafts, bars, and support posts. Inch and metric sizes available.



SPIETH Guide Bushings

**SPIETH ADJUSTABLE HYDRODYNAMIC GUIDE BUSHINGS** allow accurate guiding of axially or rotoaxially moving machine components on shafts, quills, boring bars and more. When adjusted, a preloaded hydrodynamic guide is achieved. Inch and metric sizes available.



SPIETH Hydraulic Sleeves

**SPIETH CLAMPING NUTS** provide a high degree of efficiency, minimal tightening torque, and high durability. A high degree of axial pretension is safely achievable with applications on high speed spindles. Simple actuation and capable of withstanding dynamic loads.



SPIETH Clamping Nuts

**TSCHUDIN AND HEID LINEAR ROLLER BEARINGS** use a contoured cylindrical roller design to achieve line contact with the guideway rather than point contact with ball bearings. This novel design results in play-free line contact with minimal pre-load and optimal rolling characteristics to provide a long service life with low maintenance and exceptional load carrying capacity.



TSCHUDIN & HEID Linear Roller Bearings

**OTT WORM GEARS** are a patented high-precision split worm gear set from OTT-Gears Company (OTT-Zahnradfertigung, Germany). All spiral gears are manufactured as high quality gear sets. The teeth have considerably more contact ratio than standard worm gear pairs. This results in greater power transmission and accuracy of the application.



OTT Worm Gears

**ODU INDUSTRIAL CONNECTORS** provide a complete turnkey solution for producing unique application-specific connection devices. The ODU-MAC is a modular connector system for industrial and test instrumentation applications. The system consists of modules which can be mounted in an open aluminum frame or DIN housing.



ODU Electrical Connectors in custom built housing by AME



## COMPLETE SOLUTIONS FROM ONE SOURCE

### EXCLUSIVE SALES PARTNER OF OTT-JAKOB IN NORTH AMERICA WITH 24-HOUR POWER DRAWBAR REPAIR SERVICE

As the exclusive North American partner of OTT-Jakob steep taper and HSK drawbars and components, AME provides the most reliable and highest precision tool holding solutions in the world. OTT-Jakob is the premier choice, combining industry-leading technology matched with proven production processes. Their products provide durability and reliable tool holding and are recognized worldwide for their performance and uptime.

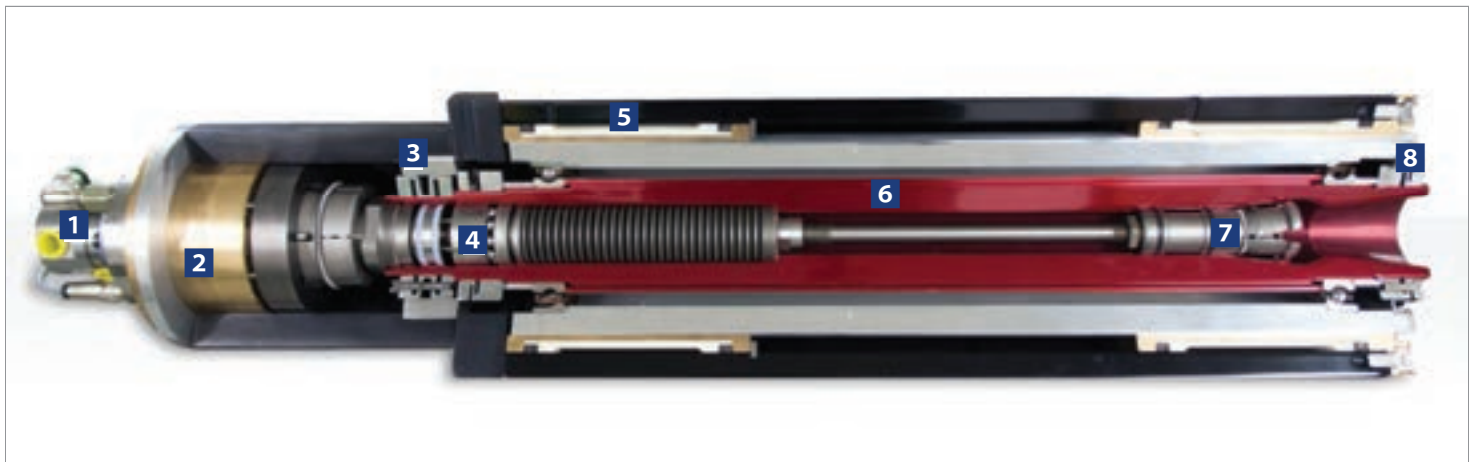
The partnership between OTT-Jakob and AME is based on quality and performance that can be counted on day after day, year after year. AME's Spindle Interface Group backs every tool holding solution we sell with maintenance, repair and reconditioning services to ensure a long, productive life from your investment. AME engineers are available for up-front application and integration assistance to provide you with a tool holding solution that's custom-tailored to your machines and your unique requirements.



- |                                  |                                       |                                       |
|----------------------------------|---------------------------------------|---------------------------------------|
| <b>1</b> OTT 1KGD Rotary Union   | <b>4</b> Intensifying Wedge Mechanism | <b>7</b> Steep Taper Gripper Assembly |
| <b>2</b> OTT Unclamp Unit/Inwest | <b>5</b> AMBUSH Squeeze Bushing       | <b>8</b> Spieth Adjustable Locknut    |
| <b>3</b> Spieth Clamping Sleeve  | <b>6</b> Spindle Shaft                |                                       |



Spindle Shafts Manufactured by AME



OTT-Jakob Power Drawbar and AME Spindle Shaft assembly - an exploded view.

**OTT-JAKOB POWER DRAWBARS** are designed to hold cutting tools securely in place. They offer the highest clamping forces, with an intensifier amplifying the spring force and locking the system. Features include:

- Power-off clamping
- Intensified spring force with wedge mechanisms
- Compact design
- Minimal rotating mass
- Quick-change design

**AME SPINDLE INTERFACE** offers complete manufacturing of spindle shafts. Utilizing state-of-the-art machines and STOTZ air gaging, AME adheres to (but is not limited to) the following tool standards:

- OTT-Jakob Inner-Contour
- HSK
- Steep Taper
- KM
- Big Plus
- Capto

**SPINDLE INTERFACE PRODUCTS & SERVICE**

- Complete Drawbar Systems
- Spindle Shafts
- Custom Quills
- Test Arbors
- Power Chk. Pull Force Gage
- HSK Gripper Assemblies
- Steep Taper Gripper Assemblies
- Rotary Unions
- Unclamp Units
- Pallet Clamps
- Clamping Cartridges
- Engineering/Tech Support
- STOTZ Air Gaging
- Vibration Analysis



Steep taper ES-style power drawbar assembly (left)  
HSK power drawbar assembly (right)



High Precision Spindle Shaft



Spindle Shaft Components

## THE PIONEERS IN CARBIDE SAWS



AME's Carbide Saw Group provides end-to-end sales and service for high-performance carbide-tipped saws that provide years of reliable operation in high-volume metal cutting. Saws are built to order or available in standard configurations to meet your precise specifications. AME was the first company to develop carbide billet saws for the world market and has specialized in carbide saws since 1970.

We're the only company in the U.S. to offer turnkey solutions for saw blades, machines and automated systems under one roof. Only AME can provide a total performance guarantee, and back it up with advanced CAD modeling, critical problem-solving capabilities, and four decades of carbide saw design/build experience.



**SPEEDCUT**

**Metalcut**







**AMSAW® CARBIDE-TIPPED CUT-OFF SAWS** in standard or automated configurations can saw ferrous and non-ferrous materials with speed and precision. Straight or miter cutting on bars or billets up to 600mm, or rectangles, rails (optional drill units), profiles, plates, and pipes or tubes (single or in layers). Automatic bar loading, unloading and stacking available on automated machines.



**DESIGN/BUILD/SUPPORT SERVICES** are available for every AME saw. Saws can be designed and built to any specification. Repair, refurbishing and rebuild services are available as needed for any saw in the world.



**SPEEDCUT**, a division of AME's Carbide Saw Group, provides sales and services for circular carbide-tipped blades, including on-site blade sharpening and repair. Diameters up to 78" can be manufactured and serviced on-site. A variety of tooth configurations are available.



## LEADER IN GAGING TECHNOLOGY FOR ALMOST 60 YEARS

### THE EXCLUSIVE NORTH AMERICAN STOTZ PARTNER

STOTZ produces all types of air probes and air rings such as open jet, ball jet, leaf jet, and snap ring style gages. Air rings and probes are typically offered with 2 air jets positioned 180° apart. They can also be made with 3, 4, or 6 jets depending on the application. Master Setting Rings and Discs are offered in X, XX, and XXX classes and available in steel, chrome, or carbide.



MLS Micro Illuminated Column

# STOTZ®

### YOUR COMPLETE SOLUTION

Stotz specializes in designing and manufacturing customized measuring stations for customer specific applications. These can range from manual to automatic loading/unloading and can be customized for your application and requirements.

Stotz systems can be used to scan contours of inside or outside diameters. They incorporate our SPW/DSPW transducers as well as a linear drive and scale. With this combination we can draw the contour of your part on the computer monitor and with the SPC software, we can ACCEPT/REJECT/ or REWORK the part based on your requirements.

Our measuring systems can be used for part classification and matching of mating components. They can also be used as an integral part in a match grind application. The workpiece can be to match grind the part. The measuring systems are completely computerized and utilize the Stotz SPC software. We would be glad to discuss any applications or requirements that you have.



MSM Column

- Inside Diameter
- Outside Diameter
- Straightness
- Lengths
- Perpendicularity
- Parallelism
- Tapers
- Flatness
- Cylindricity
- Classification / Category Sorting
- Matching Applications
- Many other Geometrical callouts



MRA Multifunctional Measuring and Control Computer

## MULTIFUNCTIONAL MEASURING AND CONTROL COMPUTER

The MRA is designed for high precision and multifunctional capabilities. In addition to providing various ways for measuring input, it can be customized to meet your requirements.

- Pneumatic and electronic (LVDT) measurement
- Up to 99 programs built in
- Customizable display
- RS232 output
- Digital I/O for machine communication
- Up to 16 pneumatic channels – simultaneous measurement – removable transducer card
- 16+ LVDT internally or externally
- Minimal air consumption
- Ethernet for network file saving or communication
- Profibus
- Analog I/O's
- Quick changeover from one gage to another with the quick-connect couplers



Measuring System

Stotz has solutions for all size measuring tasks. We offer measurement columns starting with a single channel for simple gaging requirements up to 16 channels simultaneously. For even larger requirements, we offer measuring PC's that are virtually limitless in the tasks it can handle. Give us a call on your next project and let us match a system to your needs and budget.



Snap Gage



## TELL US WHAT YOU NEED, WE MAKE IT HAPPEN

That simple premise is behind a suite of contract services available from AME. By outsourcing to AME, you bring critical skill sets into your organization cost-effectively on an as-needed basis.

### DEDICATED TO EXCELLENCE

Our quality management system is based on and certified to ISO 9001:2000, and our processes are audited and reviewed regularly to make sure we continue to meet these ISO requirements. At AME, every employee is involved with and focused on producing the highest quality results.



**NEW 2013!**  
Toyota FH800SX-i with 800mm x 800mm pallet,  
envelope 59" x 59"h, 308 Tools, 20 Pallet pool

### EQUIPMENT HIGHLIGHTS

16 CNC Turning Centers Including:

- MAZAK QT 450M - 10" x 40"
- MAZAK QT 450M - 10" x 80"

4 Multiaxis Turning Centers Including:

- Mazak Integrex 400
- Mazak Integrex 100
- Mazak Multiplex 6100Y CNC Lathe

- MAZAK HCN 4000
- MITSUBISHI H800 D, Large Capacity
- MAZAK H630, 30" x 80"
- NIIGATA HN80D, High Precision
- NIIGATA HN100D, High Precision

5 CNC Vertical Turning Centers

5 Horizontal Boring Mills including:

- Ikegai Model NB110T
- IKEGAI CNC Boring Mill, 98" x 138"
- DEVLIEG Jig Mill 5K-110, 60" x 110"
- DEVLIEG Jig Mill 4K-71, 48" x 71"
- DEVLIEG Jig Mill 4K-60, 60" x 48"

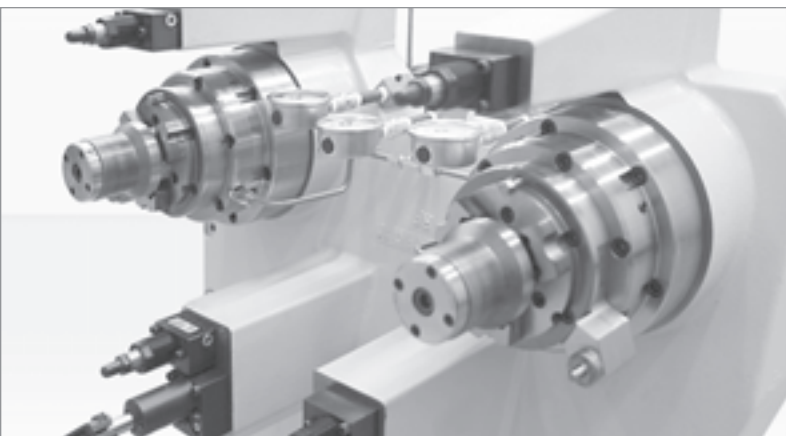
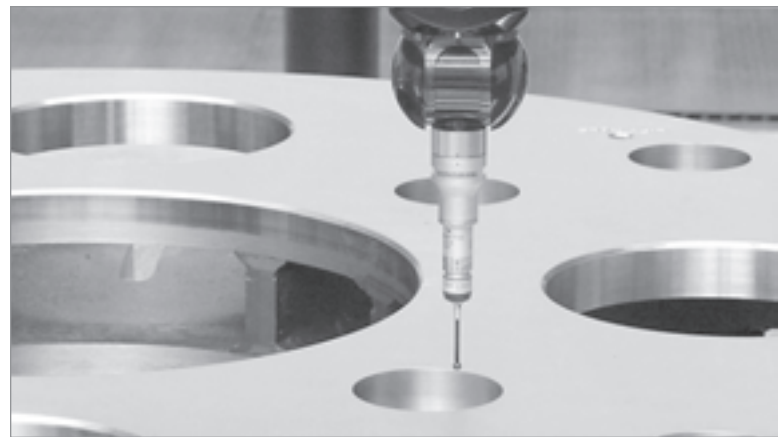
High Precision Grinding Equipment:

- Studer S40 Universal Cylindrical Grinder
- Studer 533 1000mm Cylindrical Grinder
- TRIPET TST 400 Grinding Center



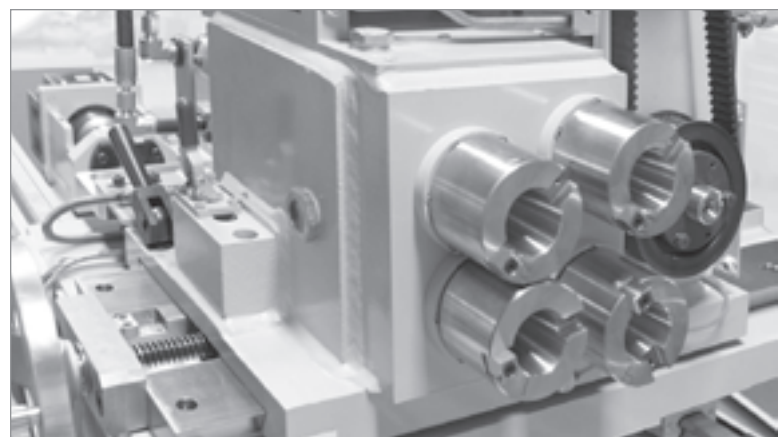
**CONTRACT MANUFACTURING** at AME features a full complement of CNC equipment to produce precision machine components, from small round parts, as small as a half-inch in diameter, up to large machine base components. AME engineers work with your CAD drawings and can build complex precision parts exactly to specifications per ISO-9001 guidelines. Contract manufacturing has been a core competency at AME for almost 50 years.

**CONTRACT INSPECTION** at AME features two large DEA coordinate measuring machines (CMMs) to inspect very large parts—literally up to the size of a pickup truck. The CMMs operate in a temperature controlled facility to ensure extremely precise measurements.



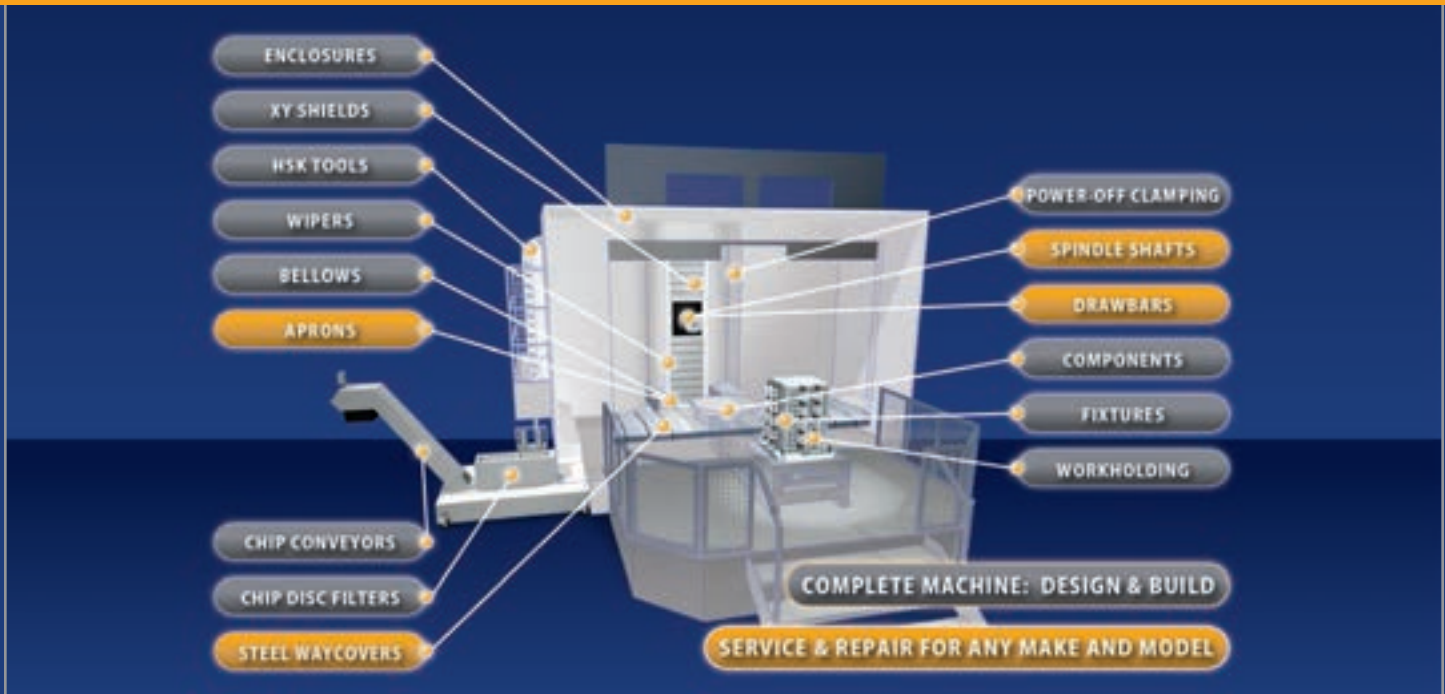
**TURNKEY MANUFACTURING SERVICES** are available for a wide range of applications. AME can assure successful completion of every element of your project. We do the machining in-house, provide complete inspection of all parts, provide assembly, and develop and perform testing.

**COMPUTER-AIDED DESIGN/BUILD SERVICES** are available for special machines and components. AME designers can work for you or with you to develop expertly designed fixtures, machines, handling equipment and systems.



# YOUR ONE SOURCE SOLUTION

FOR MACHINE TOOL COMPONENTS



## Innovative People, Products and Processes

At AME, innovation is part of our culture. You can see the result in our processes, partnerships, people and services, and in the precision engineered components, machines and services showcased here. Learn more about AME and our innovative approach to precision machining, call 815-962-6076.

[www.ame.com](http://www.ame.com)



## Global Excellence in Machine Protection

For 50 years, AME's sister company, Hennig, has been designing and producing custom machine protection and chip/coolant management products for state-of-the-art machine tools. Hennig products are reliable, durable, and perfectly tailored to protect against corrosion, debris and common workplace contaminants. There's no better way to protect your investment on the shop floor.

[www.hennigworldwide.com](http://www.hennigworldwide.com)



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