



Bevel Gear Cutting

Spiral Bevel and Hypoid Gear Cutting

- (2) Gleason Phoenix 450 HC CNC Spiral Gear Cutters
- (3) Gleason Phoenix 250 HC CNC Spiral Gear Cutters
- (2) #645 Gleason Hypoid Gear Generators
- (1) #118 Gleason Generator
- (1) #116 Gleason Generator
- (1) #108 Gleason Spiral Bevel Generator
- (1) #106 Gleason Generators
- (2) #26 Gleason Spiral Bevel Generators
- (4) #2 Gleason Spiral Bevel Generators



Spiral Bevel Gear

Straight Bevel Gear Cutting

- (1) #104 Gleason Straight Coniflex Gear Generators
- (1) #24A Gleason Straight Bevel Coniflex Generators
- (2) #14 Gleason Straight Bevel Coniflex Generators
- (2) #2A Gleason Coniflex Gear Generators
- (1) Cincinnati CNC Gear Gasher

Straight Bevel Gear Set



**Arrow produces bevel gears
up to 30 inches in diameter at
quality levels of Q13**

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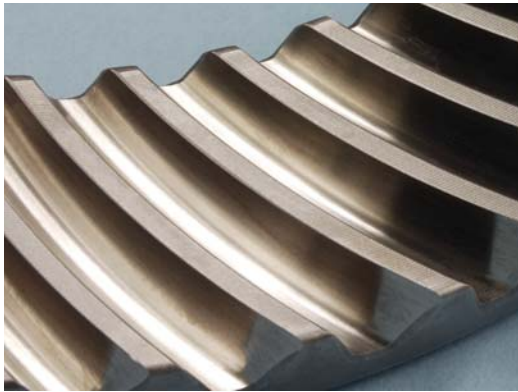
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Bevel Gear Grinding, Lapping and Testing

Bevel Gear Grinding

- (1) Gleason Phoenix II 600 PG CNC Spiral Gear Grinder
- (1) Gleason Phoenix 450 PG CNC Spiral Gear Grinder
- (1) Gleason Phoenix 400 PG CNC Spiral Gear Grinder
- (1) Gleason Phoenix II 275 PG CNC Spiral Gear Grinder
- (1) Gleason Phoenix 200 PG CNC Spiral Gear Grinder
- (2) #463 Gleason Spiral Grinders 3-18" Wheel



Gleason Phoenix II 600

Bevel Gear Lapping

- (3) #19 Gleason Bevel Gear Lappers
- (1) 138/504 Gleason Bevel Gear Lapper 36"
- (1) #SL3 Oerlikon Lappers

Bevel Gear Testing

- (1) #552 Gleason Bevel Gear Tester
- (1) #523 Gleason Bevel Gear Tester
- (5) #104 Gleason Angular Hypoid Testers (14000 RPM)
- (5) #27 Gleason Bevel Gear Testers
- (3) #17 Gleason Bevel Gear Testers
- (14) #13 Gleason Bevel Gear Testers
- (18) #6 Gleason Bevel Gear Testers
- (2) #4 Gleason Bevel Gear Testers



In-Process Testing of Bevel Gears

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Parallel Axis Gear Cutting, Grinding and Finishing

Spur & Helical Gear Cutting

- (1) Gleason Phoenix 400 GH CNC Hobber
- (1) Gleason Phoenix 200GH CNC Hobber
- (1) Gleason Phoenix 125 GH CNC Hobber
- (1) Lorenz Model LS-426 CNC Gear Shaper
- (1) Lorenz Model LS-424 CNC Gear Shaper
- (1) Lorenz Model LS-152 CNC Gear Shaper
- (1) P403 Pfauter Gear Hobber
- (1) 16 x 16 Barber-Colman Hobber
- (1) #6-10 Barber-Colman Hobber



Spur Gear



Hofler Rapid 800

Spur & Helical Gear Grinding

- (1) Hofler Rapid 800 Spur & Helical Grinder
- (1) Hofler Helix 400 SK CNC Gear Grinder
- (2) Kapp CNC Internal Gear Grinders
- (1) Kapp CNC External Gear Grinder



Spur Gear Finishing

- (1) Vinco Spline Lapper
- (1) GHD Red Ring Gear Honer

Arrow is capable of producing parallel axis gears up to 36 inches in diameter.

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Heat Treat and Metallurgical Inspection

Heat Treat Equipment

- (2) Sunbeam 30" x 48" x 24" Automatic Carburizing Hardening & Quench Furnaces
- (1) Sunbeam RER-618 Rotary Furnace
- (1) Blue M Oven
- (5) Super System 2 Bench 3 Gas Analyzers
- (3) L&N 25" x 48" Pit Carburizing Furnaces (updated with latest controls)
- (1) Lindberg Heavy Duty Pit Furnace 28" x 48"
- (1) Lindberg 24" x 48" x 20" Box Furnace
- (1) Lindberg 36" x 48" x 24" Box Furnace
- (3) JL Becker 30" x 48" x 24" Draw Furnaces
- (2) Sunbeam 30" x 48" x 24" Draw Furnaces
- (1) Sunbeam 30" x 54" x 16" Box Furnace
- (1) Sunbeam 30" x 48" x 24" Multi-Stage Washer & Dryer
- (2) Surface Combustion 2400 CFH Endothermic Gas Generators
- (1) Despatch Electric Oven - Type RS-0
- (1) Despatch Electric Oven - Type R5-3
- (1) Industrial Oven - Stress Relieve for Tooth Grinding
- (1) Wisconsin Oven - Walk-in (4' x 6' x 6' Ht.)
- (2) Grieve Ovens SC-350 - Stress Relieve
- (1) Grieve Oven SA-550 - Stress Relieve
- (2) Grieve Ovens 333 - Stress Relieve
- (3) Webber LT25 48" x 30" x 30"



Carburizing Furnace

Heat Treat Metallurgical Lab

- (1) Struers Rotopol II Polishing Machine
- (1) Struers Unitoms Cutoff Saw
- (1) Struers Labo Press - 3
- (1) Struers DuroScan-70 Hardness Checker
- (1) Struers Duramin-A300 Micro Hardness Checker
- (1) Zeiss Axiovert 40 Mat Microscope
- (1) Nikon Inverted Microscope
- (1) Nikon Stereo Microscope (with digital camera and computer)
- (3) Rockwell Hardness Testers
- (2) New Age Computerized Micro Hardness Testers
- (1) Portable Rockwell Hardness Tester
- (2) Leco Automatic Carbon Determinators
- (2) SSI Dewpoint Hygrometer
- (1) Lapmaster Model 150 Super Finisher



Stereo Microscope

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Heat Treat Quenching and Straightening

- (1) Gleason #Q 140R Rolling Quench Press
- (2) Gleason #537 Quench Presses
- (1) Gleason #529 Quench Press
- (1) Dixitech DQ914 Quench Press 36" (equal to Gleason 36")
- (1) Eitel RP-40 44 Ton Straightening Press
- (1) Oil Gear 100 Ton Hydraulic Straightening Press
- (1) Greenwood C-France Straightening Press



Quench Press



Dixitech Quench Press

Blasting

- (1) Blast-it-All Automatic Blaster
- (1) Bronco Double Door Swing Table Blast Machine
- (1) Ruemelin Hand Blaster
- (2) Uni-Hone Dry Honer Blasters
- (1) Universal 4836 Dry Honer Blaster
- (1) Uni-Blast 6 Station Indexing and Turntable Blaster
- (1) Zero Blast 6 Station Indexing and Turntable Blaster
- (1) Micro Blast Blaster



Gleason Rolling Quench Press

**Arrow's Heat Treat facility
is Nadcap certified.**

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Multi Function Machining Center

- (1) Mori Seiki NT4300 Multi Axis Machining Center for Turning, Milling, Gear Cutting, Shaping, and Hobbing

Turning

- (1) Doosan VT900 Vertical Turning Lathe - 32" Chuck
- (1) Mori Seiki NL 3000/1250 CNC Lathe
- (1) Mori Seiki NL 3000/700 CNC Lathe
- (2) Mori Seiki NL2500/700 CNC Lathes
- (2) Mori Seiki SL 253BMC500 CNC Lathes
- (2) Giddings & Lewis CNC 2-Axis Vertical 18" Chuckers
- (1) Okuma & Howa 2SP-3L Twin Spindle Lathes
- (2) Mazak CNC Slant Turn 30 Lathe
- (1) Bridgeport CNC 20M Lathe
- (1) LeBlond 15" Makino 19 Regal Lathe
- (1) South Bend 16" Lathe
- (1) Harrison Alpha 460T CNC Automated Lathe

Drills / Mills / Broach / Saws

- (1) Hurco VMx64 CNC Machining Center with 4th Axis
- (1) Toyoda FV1165 CNC Vertical Machining Center with 4th Axis
- (1) Brother TC-S2C-CTS CNC Tapping & Drilling Center with 4th Axis
- (1) Cincinnati Milacron VMC 750 CNC with 4th Axis
- (1) DAH-LIH Vertical Machining Centers with 4th Axis
- (1) Trak CNC Milling Machine w/indexer
- (3) Drill Presses Multi-Spindle - Leland Gifford
- (1) Cincinnati Bickford Drill Press
- (2) Bridgeport Milling Machines
- (2) Automatic Horizontal Drill Presses
- (1) Cincinnati Bickford Drill Press
- (1) Custom Gun Drill
- (1) Portable Centering Tool
- (1) Defiance Drill Press
- (1) Sundstrand Centering Machine
- (1) 25 Ton x 90" Broach - Colonial
- (1) 20 Ton x 60" Broach - American
- (1) 3 Ton x 36" Broach - Colonial
- (1) 5 Ton Tymiles Broach1 Marvel 15A8 Band Saw
- (2) Marvel 15A4 Band Saw

ID / OD / Surface Grinding

- (1) Okuma G1-20N/4W (4 spindle) CNC Internal Grinder
- (1) Okuma GI-20N CNC Internal Grinder
- (1) Bryant LL3-50 CNC Internal Grinder
- (2) Bryant LL3-55 CNC Internal Grinders
- (1) Toyoda GU4-100 CNC Universal Grinder
- (1) Toyoda GL6A CNC Angle Wheel O.D. Grinder
- (2) Toyoda GL4A CNC Angle Wheel O.D. Grinders
- (1) Model 171 CNC Heald Internal Grinder Retrofitted with Allen Bradley Controls
- (1) Model 271 CNC Heald Internal Grinder
- (1) Matrix 1600 CNC Thread Grinder
- (1) Okamoto 12" x 24" Precision Surface Grinder
- (2) Bryant Center Grinding Machines
- (3) Ex-Cell-O Center Lappers
- (1) 361 Heald Rotary Surface Grinder - 24"
- (1) 361 Heald Rotary Surface Grinder - 30"
- (1) Springfield 25 CNC Vertical Grinder



Doosan Vertical Turning Lathe

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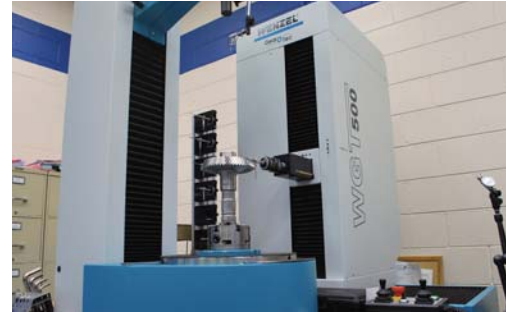


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3 Climate Controlled Gear Labs

- (1) Wenzel WGT500 CNC Gear Checker
- (1) Wenzel WGT850 CNC Gear Checker (Fall 2013)
- (1) Gleason M&M Sigma 5 CNC Inspection System
- (1) Hofler EMZ 632 CNC Gear Checker
- (1) M&M 3515 Gear Inspection System
- (1) M&M 2025-4 QC System Gear Checker
- (2) Hommelwerke Contour Tracers
- (1) Fellows 8M Redline Checker
- (2) Fellows 20M Redline Checkers
- (2) Model 12 Fellows Involute Checkers
- (1) Illinois Composite Checker
- (7) Fellows Spacing Checkers - #12-C



Wenzel CNC Gear Checker

Inspection Equipment

- (1) Zeiss CMM 900/1800/700
- (1) Fero Platinum 6 Axis 8ft Arm
- (1) OGP Optical Comparator
- (1) J & L Optical Comparator
- (1) Schenck HM20BU Balancer
- (1) Magnaflux Magnaglow - 6000Amps - TypeH-810-R
- (1) Magwerks MV3436 Tri-Vector Magnaflux Machine
- (1) Magwerks FM-2225X Demagnetizer
- (1) 5600 Pneumo-Centric Roundness Checker
- (5) Trimos Vertical Height Gages
- (2) ST Industries 30" Optical Comparators
- (2) Mitutoyo Optical Comparators
- (1) Mitutoyo CMM Retrofitted to Zeiss Controller
- (5) Mitutoyo Vertical Height Checkers
- (1) Nital Etch Line
- (1) Beta Lasermic
- (1) Trimos Lab Concept



Zeiss Coordinate Measuring Machine

Deburr / Polishing / Part Marking

- (1) Sweco Vibratory Deburring Machine - 3 cu.ft.
- (1) Lenze Gratomat Deburring Machines
- (6) Polishing & Finishing Machines
- (3) REM Isotropic Superfinishing Systems
- (1) Trumpf VWS 1200/VMC1Laser Marker with 2D Data Matrix Capability
- (1) Schmidt Marking Machine
- (2) Robotic CNC Gear Chamfering Machines
- (1) Telesis TMP6000 Pin Marker
- (1) Telesis TMP6100 Pin Marker with 2D Data Matrix Capability
- (1) Dapra Techno Mark Pin Marker with 2D Data Matrix Capability

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Cutter and Tool Sharpening

- (1) Gleason #300 Cutter Grinder
- (1) Gleason #107 Cutter Grinder
- (5) Gleason #13 Cutter Grinders
- (2) Gleason #12 Cutter Grinder
- (1) Gleason #2 Cutter Grinder
- (3) Drill sharpeners
- (1) #232 Christian Tool & Cutter Grinders
- (2) #528 Gleason Cutter Truing Stands
- (1) Micro-Collette Shaper Cutter Sharpener
- (3) #2 Cincinnati Universal Tool & Cutter Grinders
- (1) Star Model VHS Hob Sharpener
- (1) Kapp Hob Checking Instrument
- (1) Norton Surface Grinder



Misc. Equipment

- (1) Caterpillar #150 Inertia Welder
- (1) Sullair 100HP Air Compressor
- (2) Sullair 50HP Air Compressors
- (1) Copper Strip Tank Line
- (1) DeVilbiss Paint Booth
- (2) Better Engineering Water Washes
- (1) Roto Wash
- (2) Solvent Spray Booths
- (1) Vapor Degreaser Part Cleaner

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