



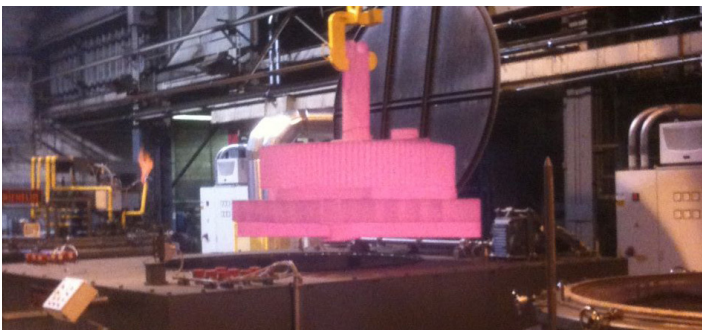
# HORSBURGH & SCOTT

## HEAT TREAT

Horsburgh & Scott has in-house capabilities in gas carburizing, induction hardening, stress relieving and through-hardening to meet all of your heat treat requirements. We also have resident metallurgical expertise for process design and process control.

### Dedicated Heat Treat Facility:

- Stand-alone 50,000 sq. ft. facility
- Captive and commercial carburizing and hardening
- Captive induction hardening
- Experienced metallurgical engineering staff
- Gears and shafts processed from 100 to 50,000 lbs.



### Latest in Carburizing and Hardening:

- Newly installed Aichelin pit carburizing furnaces
  - 1 pit 2.0m diameter x 2.5m depth
  - 1 pit 2.5m diameter x 2.0m depth
- Surface combustion pit carburizing furnaces
  - 2 pits 1.0m diameter x 1.5m depth
  - 2 pits 2.0m diameter x 4.5m depth

### Latest in Induction Hardening:

- Newly installed SAET CNC gear induction hardening machine
  - Gears to 5.3m diameter x 0.75m face
  - Shafts to 3.0m length x 1.25m face
  - Optimized for gear pitches of 2.0DP to 0.75DP
  - Nondestructive ultrasonic case depth testing



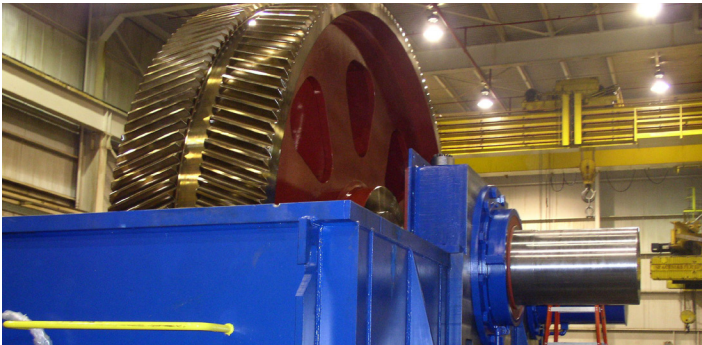
### Other Heat Treat Equipment:

- Stress relieving (up to 100,000 lbs.)
  - 6.0m x 6.0m x 4.0m
  - 5.0m x 5.0m x 4.0m
  - 2.0m x 4.0m x 2.0m
- EquoTip, Knoop, King, Rockwell, Micro and BHN hardness testers
- Complete metallurgical laboratory
- Carbon analyzer

## COMPANY OVERVIEW

### Manufacturing Capabilities:

- Gear cutting, including hobbing, shaping, Sykes herringbone, flycutting, Maag shaping (conventional and hardcutting), up to 7.3m
- Form grinders to 6m; AGMA class 14 with internal grinding to 3.5m OD
- Vertical turning to 15.2m with live spindle, shaft turning to 2m diameter, OD grinding to 1.8m diameter. Keyseating to 1.5m stroke with indexable table
- Large welded gear blanks to 6m diameter with furnace stress relieving
- Horizontal Boring Mills to 229mm spindles, 7 axis CNC floor mill with 6.1m index table



### Heat Treat:

- New Aichelin carburizing and hardening line:
  - 2.0m diameter x 2.5m depth
  - 2.5m diameter x 2.0m depth
- New Saet CNC induction hardening machine up to 5.3m diameter
- Effective case depths for carburizing and induction hardening to 6.4mm
- Stress relieving of component weights to 100,000 lbs
- Process components to 50,000 lbs

*Main Plant*  
5114 Hamilton Avenue  
Cleveland, OH 44114  
216.431.3900

*Heat Treat Facility*  
4629 Hamilton Avenue  
Cleveland, OH 44114  
216.432.5804

*Repair Center*  
1441 Chardon Road  
Euclid, OH 44117  
216.865.0550

### Engineering and Quality Assurance:

- Engineering analysis and upgrades
- Reverse engineering
- Sophisticated tools and practices to follow rigorous standards, including AGMA, ISO 9001:2008, AASHTO and API
- Zeiss Coordinate Measuring Machine (4 x 4 x 2m)



### Comprehensive Industrial Gearing Repair and Service:

- Engineering analysis, gearbox evaluations, reverse engineering
- Disassembly and reassembly
- Gear inspection
- Gearbox no-load spin testing
- Global field service
- Installation supervision
- Predictive and preventative maintenance
- Detailed borescope inspections
- Non-destructive testing
- Condition monitoring (vibration, torque, load, temperature, pressure, etc.)
- Real time, remote and networked
- Alarm notification
- Root cause analysis
- Condition assessment & dynamic modeling

### Solutions for Many End Markets and Applications:

- Metals
- Mining
- Pumps
- Sugar
- Oil & Gas
- Wind Energy
- Tire & Rubber
- Power Generation
- Transportation
- Infrastructure
- General Industrial



[www.horsburgh-scott.com](http://www.horsburgh-scott.com)