NITREX

TOOL STEEL HARDENING FURNACES

MEETING THE PERFORMANCE DEMANDS OF TOOL & DIE APPLICATIONS

NITREX FURNACES

- PRACTICAL
- DEPENDABLE
- EFFICIENT
- ECONOMICAL

Eco-friendly technology

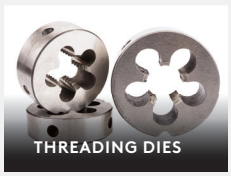
ADVANCED SOLUTIONS

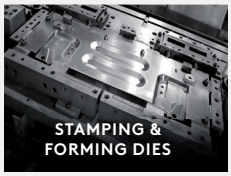
NITREX takes tool steel hardening to the next level with our advanced furnaces, capable of vacuum, tempering, and nitriding treatments. Engineered for excellence, these furnaces enhance the metallurgical properties of tool steels, minimize surface degradation, and ensure precise process control. This comprehensive approach boosts the lifespan and functionality of tools, providing them with unparalleled wear resistance and dimensional stability. Together, they optimize the tool's durability and consistently surpass the performance standards required for their applications.

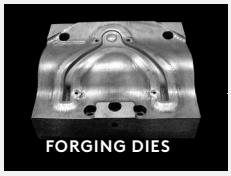
TRUSTED EXPERTISE IN HEAT TREATMENT

With decades of experience in nitriding, vacuum heat treatment, and coatings, Nitrex and its affiliate G-M Enterprises are your trusted partners for achieving excellence in tool steel hardening. Our processing experts can guide you in selecting the best solutions that optimize the performance, quality, and productivity of your operations. Contact us today and trust Nitrex to bring our expertise to your project!

APPLICATIONS







STEELS

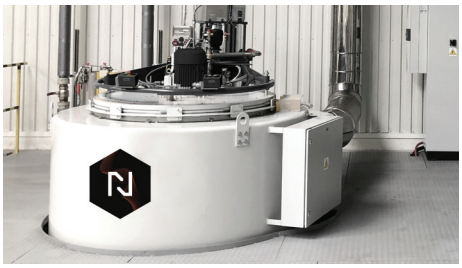
- H13
- M2
- S7
- D2
- D3
- H11
- A2
- A6

VACUUM HEAT TREATMENT

Hardens and refines tool steel in a clean, high-temperature environment

TEMPERING

Adjusts the hardness and brittleness to optimize mechanical properties



NITRIDING

Provides very hard surfaces on tool steels and enhances wear resistance, fatigue life and lubricity

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VACUUM HARDENING

Vacuum heat treatment with 2, 6, and 15 bar gas quench is the method of choice for hardening tool steels, particularly very large dies. Its clean vacuum environment eliminates common issues such as decarburization and impurities. When paired with a Nitrex vacuum temper furnace, treated parts gain enhanced durability, finish, and performance.

FEATURES

- **TEMPERATURE RANGE OF**
  1000°F-2400°F (538°C-1316°C)
- **CURVED GRAPHITE ELEMENTS**
  for optimal temperature uniformity
- **ELECTRICALLY HEATED**
  for reduced emissions and a cleaner operation
- **VENTURI GAS NOZZLE DESIGN**
  for uniform cooling and ease of replacement
- **GRAPHITE INSULATION**
  for lower energy consumption

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BENEFITS

- Uniform and fast cooling for best metallurgical results
- Reduced oxidation and decarburization
- High reproducibility and consistency in treated parts
- Higher temperature range allows for treatment of most tool steel grades
- Durable design for years of worry-free use
- Clean, environmentally-friendly, and sustainable process

Available as an internal or external quench.

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TEMPERING

Tempering is essential for reducing the brittleness and increasing the ductility of hardened tool steel for better performance. At high temperatures, conventional tempering can cause excessive oxide formation. Additionally, with nitrogen protective gases, cooling needs to be done indirectly, which can be time-consuming. Nitrex offers three cooling methods that are more efficient, enhancing productivity and ensuring a cleaner finish.

FEATURES

- **VACUUM PURGE**
  for clean atmosphere during heating and cooling
- **CONVECTION HEATING IN NITROGEN**
  for very uniformly heated loads
- **LIGHT CERAMIC FIBER INSULATION**
  for fast and efficient heating and cooling, using indirect air or water
- **STAINLESS STEEL RETORT**
  for maintaining an airtight environment and ensuring uniform heating with accurate temperature control

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BENEFITS

- Ideal for heat treat cell, semi or fully automated production
- Long-lasting, robust construction
- Eco-friendly, sustainable process
- Clean processing up to 1300°F (700°C)
- Optional gas nitriding package available

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NITRIDING

Nitriding improves wear resistance of tool steels substantially, forming a hard, shallow case without affecting other properties and introducing benefits such as improved lubricity and fatigue life, ultimately extending the service life of dies.

FEATURES

- **UNIFORM TEMPERATURE**
  achieved through convection heating with inert gas, as well as ammonia and hydrogen
- **SEPARATE HEATING ZONES**
  for accurate temperature control
- **FAST COOLING**
  in inert gas environment with three available cooling options
- **VERSATILE FUNCTIONALITY**
  also serves as a tempering furnace, offering a nitrogen atmosphere and accelerated cooling capabilities

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BENEFITS

- Various designs accommodate light to heavy and continuous workloads
- Low power and production media consumption
- Low temperature process prevents distortion or dimensional changes in treated parts
- Turnkey system pre-configured with proven recipes for immediate use
- Built for dependable, long-term use

Pit nitrider is ideal for processing long parts. Also available in horizontal version perfectly suited to match the load size of a horizontal vacuum furnace.

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