ALNAT™ P

Annealing

The Industry Challenge

Although annealing is one of the last stages during the manufacturing process, it is no less important. A key annealing consideration is creating an atmosphere within the furnace that is neutral to the parts being processed.

Proper annealing can restore the mechanical and physical properties of metals without changing its chemical composition. Improving quality of parts with higher performance processes is a primary concern, particularly when developing new certifications.

The ALNAT™ P Solution

A comprehensive solution for and adapted to your needs, Nexelia™ for Annealing combines the best of our gases, application technologies and expert support.

Nexelia™ for Annealing is suitable for semi-products and finished parts made of ferrous and non-ferrous metals in all batch-type and continuous furnaces. If you are processing metallic parts under a competitive environment, Nexelia™ for Annealing offers you a truly effective solution.

Your Advantages

Meet high quality requirements

Our solutions precisely mix nitrogen and hydrogen to provide a large range of atmosphere compositions and flow rates. These high purity mixtures (with very low H_2O, CO_2 or O_2 contents) produce reducing atmospheres or protect against decarburization when spiked with propane or natural gas.

Increase production performance

Reduce global costs by improving operations and avoiding rework. Increase flexibility and productivity with robust solutions, less downtime, less post treatments and improved yield.

Make the most of your furnace

We design and supply multi-furnace or single furnace gas panels to suit your specific installation. Our service includes gas handling and safety training, atmosphere control, maintenance and troubleshooting.

Act safely and responsibly

Increase first Health and Safety in your operations with less noise and oil fumes, no Volatile Organic Compounds (VOC) and less particulate emissions. Reduce the ecological impact of heat treatment.

Core Features

Nexelia™ for Annealing consists of:

Gas

- Nitrogen (N_2) supply from liquid storage
- Hydrogen (H_2) supply from bundles and cylinders

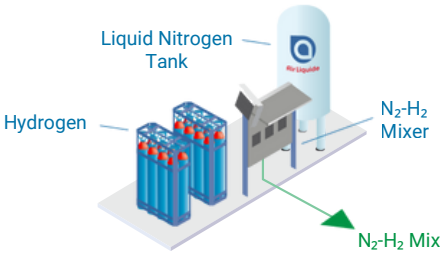
Expertise and gas atmosphere audits

- Study, design and complete implementation of your gas system
- Audit of gas distribution system
- Commissioning, monitoring and maintenance of gas networks

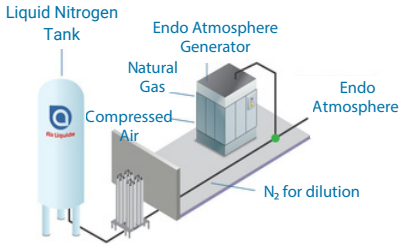
Gas application technologies

- Gas mixing system
- N_2 diluted endothermic atmosphere

Gas mixing system



N_2 diluted endothermic atmosphere



Case Study #1:
Higher Reliability

Customer profile

- Annealing of tubes (4 t/h) in a roller hearth furnace at 750-930 °C
- A single endo atmosphere generator producing 190 m³/h of diluted atmosphere with N_2
- N_2-H_2 (200 m³/h) back-up atmosphere during generator downtime for maintenance

Discovery and Solution

- Double endo atmosphere generator producing 250 m³/h of diluted atmosphere with N_2
- One back-up generator during shutdowns for maintenance of second one

Results

- Permanent availability of production capacity
- No need for N_2/H_2 back up
- 200 production hours freed up to process larger diameter tubes (>120 mm)

Case Study #2:
Less maintenance and two-fold production increase

Customer profile

- Annealing of drawn stainless steel products in a tubular furnace at 1100 °C
- N_2-H_2 40/60 atmosphere (20 L/min per tube)
- Production limitation due to clog in the internal part of the tubular furnace

Discovery and Solution

- Audit of gas distribution in the furnace
  - Air leakage in the furnace generates blocking scabs due to the oxidation of the inner tube walls
  - Poor N_2-H_2 atmosphere distribution
- Redesign N_2-H_2 gas feeders in the furnace and optimise flow rate

Results

- Feeding of 20-Tube sets into the furnace instead of 10-Tube sets
- Eliminate downtime for tube cleaning

Contact us

Air Liquide Indonesia
+62 21 8980071
marketing.indonesia@airliquide.com
Jl.Sulawesi Blok I No. 1-2,
MM2100 Industrial Town,
Gandamekar, Kec. Cibitung,
Kabupaten Bekasi, Jawa Barat 17530

www.id.airliquide.com

Air Liquide

25 August 2025