



**MATHESON**

The Gas Professionals

# MATHESON Application Technology

# Heat Treating Solutions

## MATHESON Protective Atmosphere Systems

offer reliable, safe, cost-effective alternatives to conventional endo generators, exo generators and dissociated ammonia generators.

These atmospheres can provide practical solutions for:

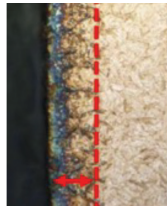
- Annealing
- Vacuum Carburizing, Quenching and Back Fill
- Carburizing, Neutral Hardening
- Sintering
- Brazing
- Powder Production
- Sub-Zero Treatment



[www.mathesongas.com](http://www.mathesongas.com)  
1-800-416-2505

## MATHESON's Methanol-Nitrogen Supply System offers measurable benefits over conventional generated atmospheres.

- Minimal startup time and shutoff time
- 30% total cost savings by reduction of energy and operation costs
- Increased productivity (consistent quality, decreased defect rate)
- Improved quality due to reduction of surface oxidation

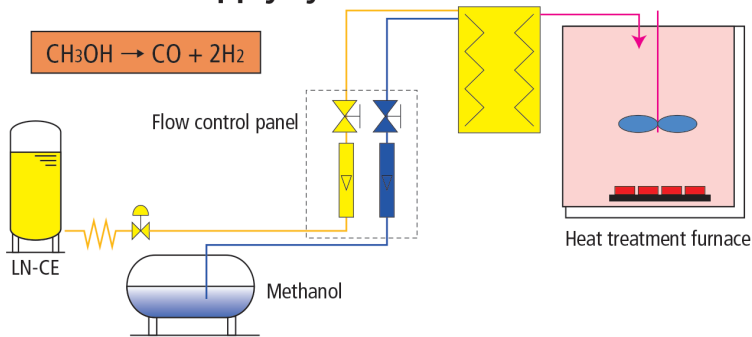


Reduce/eliminate oxidation layer

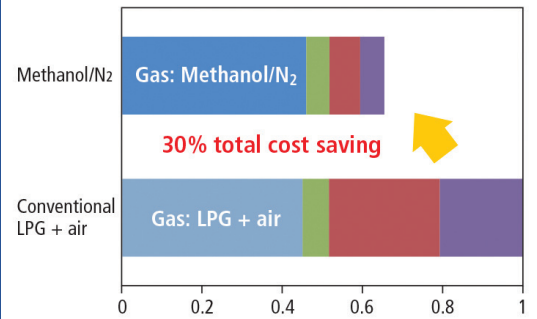


Nitrogen supply monitoring panel

### Methanol/N<sub>2</sub> supply system



Gas Maintenance Energy Replacement parts



The above cost estimates were calculated under the following conditions:

- Methanol/N<sub>2</sub>: Methanol + N<sub>2</sub> gas supplied for 12 hours per day during daytime, and N<sub>2</sub> gas alone supplied during nighttime and holidays (8 days), over an operating period of 30 days
- Conventional: endothermic gas supplied for 24 hours per day over an operating period of 30 days

## Low-Pressure Vacuum Carburizing:

MATHESON's Low-Pressure Vacuum Carburizing Solution incorporates an automatic cylinder changeover system with flow monitoring to ensure an uninterrupted supply of Acetylene.

MATHESON is a leading supplier of DMF Grade Acetylene with a nationwide distribution network ensuring Acetylene supply when and where you need it. DMF Grade Acetylene is available in single cylinders and in easy-to-use pre-packaged Micro Bulk Packs with supply capability up to 693 scfh, making them suitable for just about any size low pressure vacuum carburizing and heat treating operation.



## Vacuum Treatments with High-Pressure Gas Quenching:

MATHESON's High-Pressure Gas Quenching Solution delivers high- or low-pressure Nitrogen or Argon into the buffer tank prior to the quench cycle.

## Welding Solutions:

MATHESON offers a full portfolio of products for cutting and welding operations, including shielding gases, equipment, consumables, accessories, and safety products. MATHESON's proven application experience helps increase productivity, improve product quality, and reduce costs.

## Commitment to Customer Support:

- Complete supply system design, installation, and maintenance in compliance with NFPA 86 standards, including real time monitoring of all gases supply and audible and visual alarm on abnormal storage tank level, and gas pressure and temperature conditions
- On-going in-depth technical assistance from application specialists in optimizing gas use
- Analytical and diagnostic resources for furnace atmosphere audits, including specialty gases
- Plant safety audits and NFPA 86 requirements training

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