



VACUUM PUMPS, COMPRESSORS & SYSTEMS FOR THE

# PHARMACEUTICAL Industry





## Proven Solutions. Unparalleled Expertise.

### A WINNING COMBINATION.

For more than 110 years Nash has deliver reliable, vacuum and compressed gas solutions for industrial applications. As the original innovator behind the NASH liquid ring vacuum pump, we continue to expand our product portfolio to offer sustainable, and reliable solutions including:

- Engineered systems designed based on decades of application-based expertise that drives performance and value for your operation.
- A global network of NASH CERTIFIED™ Service and support built to deliver immediate solutions and lower total cost of ownership.

Over a century of engineering expertise combines with proven technology to deliver smarter solutions for industrial processing applications. The pharmaceutical industry is a competitive field. May the smartest company win.

# NASH® Vacuum Technology, Systems & Service for Pharmaceutical Applications

Our product portfolio includes liquid ring vacuum pumps and compressors, dry screw vacuum pumps, steam and air ejectors, and a complete range of engineered systems centered around these reliable vacuum technologies to offer complete solutions for a variety of pharmaceutical industry applications.

## Compatible Technologies

- Dry Screw Vacuum Pumps
- Liquid Ring Vacuum Pumps and Compressors
- Steam and Air Ejectors
- Standard, Engineered-to-Order and Hybrid Vacuum Systems
- Booster Hybrid Systems

## Pharmaceutical Applications Including, but Not Limited to:

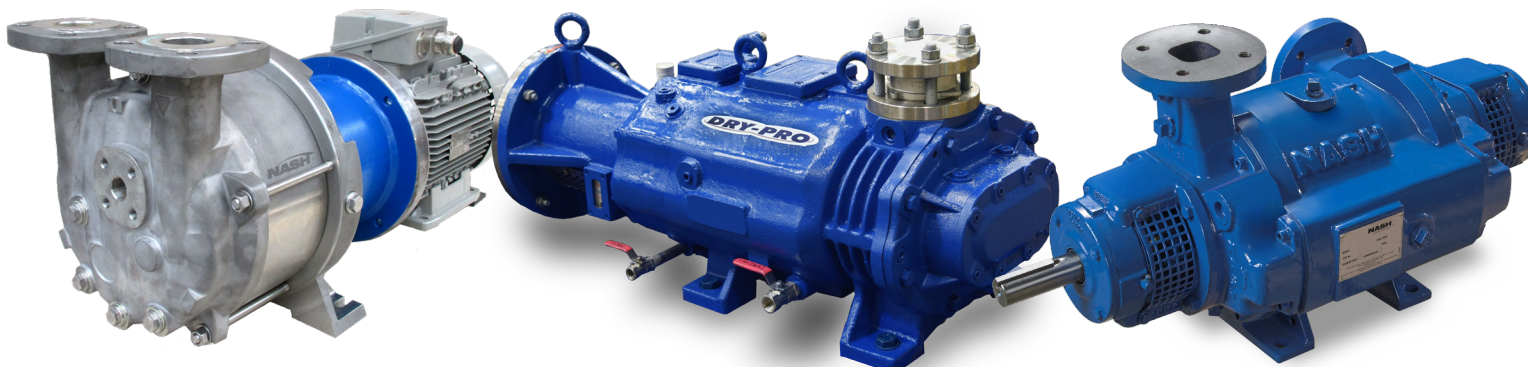
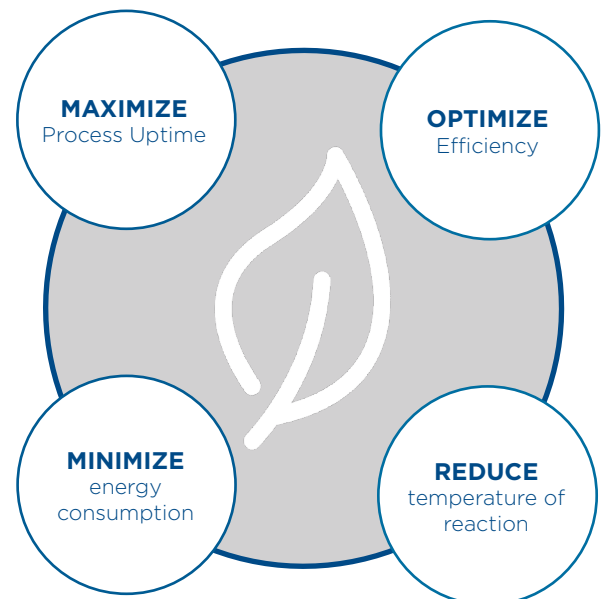
- Degassing
- Distillation
- Drying
- Evaporation
- Solvent Recovery
- Vacuum Stripping

## Quality Sustainable Solutions

Nash is committed to providing sustainable solutions that help your company comply with environmental regulations while lowering total cost of ownership. Our products and systems reduce resource consumption and emissions, while operating reliably with minimal maintenance requirements. Together we build more sustainable and profitable plants.

## ISO CERTIFICATION

In our ongoing effort to provide quality, sustainable solutions, Nash manufacturing & service facilities are ISO 9001, ISO 14001, and OHSAS 18001 certified.



# Dry Screw Vacuum Pumps & Systems

Clean, oil-free vacuum for a variety of industrial applications.

The dry and contact free operation requires no lubrication in the pumping chamber. This translates into major advantages: no process contamination and no pollution caused by the pump operation. Because of its oil-free, non-contacting screw design, NASH DRY-PRO pumps can safely and reliably handle corrosives, organics, inorganics and solvents.

- Dry running, contact free operation
- High vacuum in one stage
- High water vapor tolerance
- Short evacuation time due to high suction capacities
- Low noise level
- Easy to service
- Low life cycle costs
- ATEX versions available

## DRY-PRO® VSB VARIABLE PITCH SCREW ROTORS

Variable pitch screw rotors optimize efficiency and minimize temperature rise. Available with PTFE, PFA, or PEEK coatings, application specific options and ATEX models are available.



## DRY VACUUM SYSTEMS PRE-ENGINEERED & ENGINEERED-TO-ORDER

From pre-engineered packages to custom engineered-to-order systems we deliver a dry vacuum solution for your pharmaceutical process application. All NASH dry systems are fully assembled and tested Pre-Engineered Packages are available for quick shipment and delivered with plug & play installation.



# Liquid Ring Pumps, Compressors & Systems

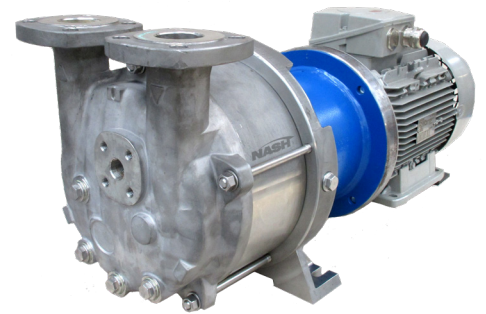
Proven performance for demanding applications

Liquid ring vacuum pumps and compressors deliver safe and reliable solutions for pharmaceutical processing applications. Liquid ring technology can handle moisture-laden inlet streams, and cool running liquid ring technology is ideally suited to handle explosive gases.

- Cool running, liquid ring technology
- Process compatible seal liquid
- Low maintenance, high reliability
- Wear free performance - no metal to metal contact
- Handles carryover and moisture-laden gas streams
- ATEX versions available

## 2BM SERIES MAGNETICALLY DRIVEN VACUUM PUMPS & COMPRESSORS

Magnetic drive with static o-ring seals achieves non-contact torque transmission, which allows for a hermetically sealed pump/compressor.



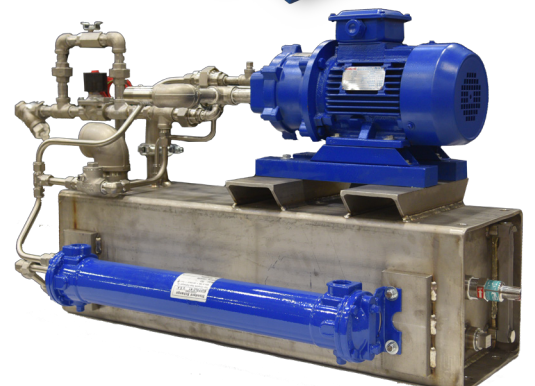
## TC/TCM TWO STAGE VACUUM PUMPS

Integral two stage impeller, these pumps can condense and recover or dispose of process vapors



## VECTRA SX VACUUM PUMPS/COMPRESSORS

Small industrial vacuum pumps deliver high efficiency and performance, reduced operating costs for a variety of applications. Also available as pre-engineered system.



## VECTRA XL VACUUM PUMPS/COMPRESSORS

Created specifically for chemical processing applications, the VECTRA XL meets stringent industry requirements and can accommodate a variety of mechanical seals.



# Ejectors & Hybrid Vacuum Systems

## Reliably Handles Large Volumes at High Vacuum Levels

Whether on their own, or as part of a NASH Hybrid Vacuum System, our steam and air jet ejectors are engineered for optimum efficiency, while maintaining their ability to handle large volumes at very high vacuum levels. With no moving parts, steam and air ejectors deliver reliable performance, simple operation with a low capital cost.

- Low capital investment
- Rapid payback
- Simple operation
- Reliable performance
- Customizable system configurations that reduce greenhouse gas emissions and steam consumption

### ENER-JET EJECTORS

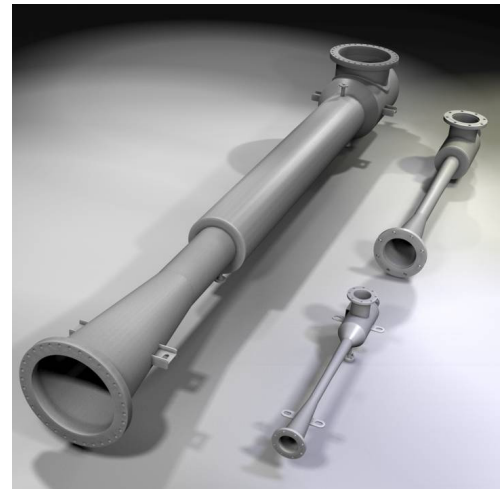
Offering up to 15% improved efficiency over previous designs, ENER-JET ejectors deliver reliable performance for large volumes and high vacuum levels.

### HYBRID VACUUM SYSTEMS

Combining the stability of NASH liquid ring vacuum pumps with the high vacuum capabilities of NASH steam ejectors results in a hybrid vacuum system that reduces GHG emissions and operating costs while improving system stability.

### BOOSTER HYBRID SYSTEMS

When vacuum levels cannot be met by a liquid ring or dry screw vacuum pump alone, our extensive expertise allows us to optimize a multistage booster system that delivers the vacuum and flow you require, with the reliable and low maintenance operation you expect from Nash.



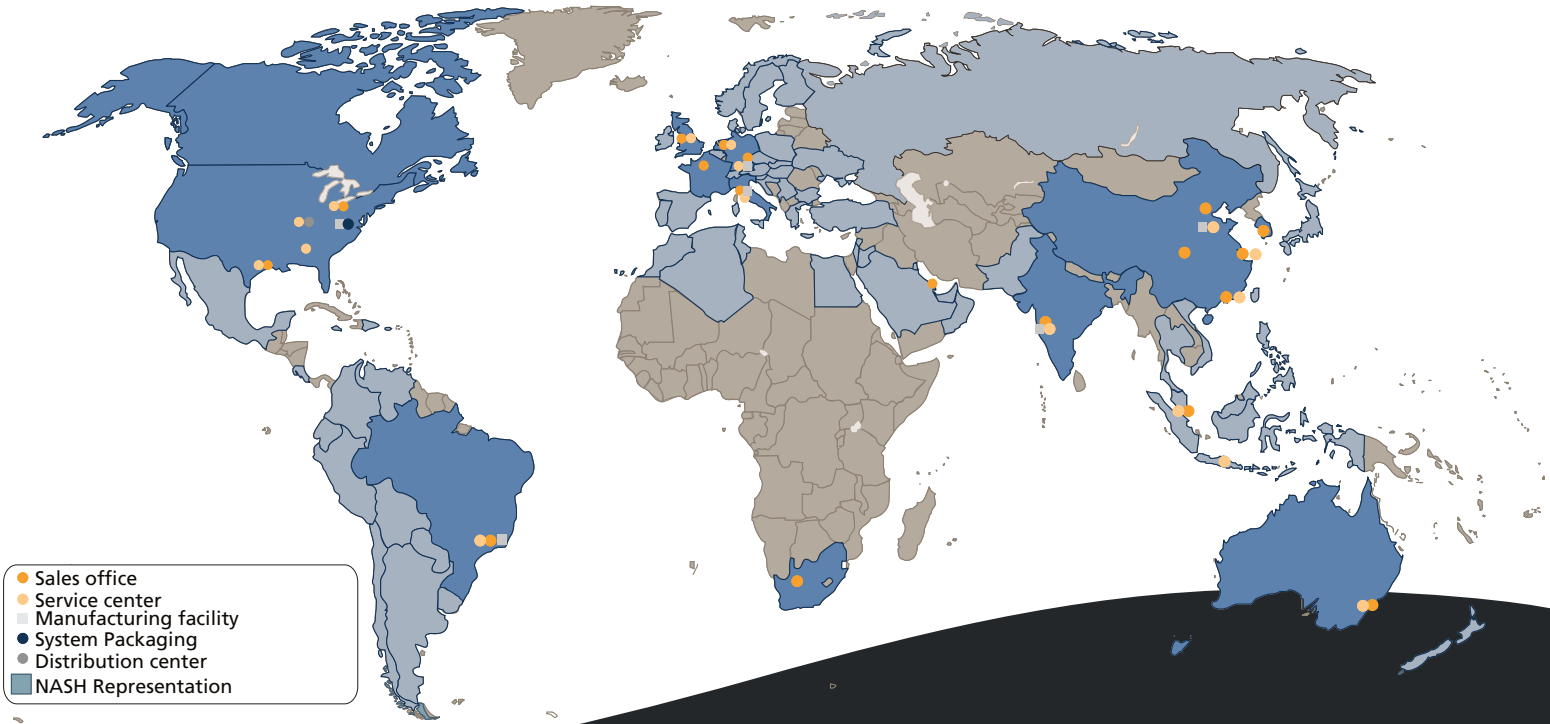
## Engineered & Packaged Solutions

We'll never forget our roots. As the original Nash Engineering Company, and today operating as Gardner Denver Nash, we know customized engineered solutions.

We utilize our extensive knowledge of liquid ring technology and decades of application expertise to design innovative, and reliable systems for the most demanding pharmaceutical applications.

From packaged systems such as our DRY-PRO Pre-Engineered Systems, and our ENER-JET™ Hybrid Vacuum System, to completely customized packaged solutions, Nash is the name you can trust for efficient, reliable systems that perform under the most demanding conditions.

- Experienced Pharmaceutical Application Engineers
- Optimum Solutions For Your Process
- Lower Operating Costs
- Lower Maintenance Costs
- Complete System Warranty
- Environmental compliance
- Global Sales & Engineering Support
- Regional Manufacturing & Assembly Centers



# Global Service & Support

NASH product and system is backed by our global network of NASH CERTIFIED™ Support & Service. With certified service centers in key industrial regions, and field service technicians at the ready, we keep your vacuum equipment and processes running smoothly - wherever that happens to be.

## What We Offer

- Engineering & Technical Support
- Inspections & System Analysis
- Repairs, Remanufacturing & Unit Upgrades
- Field Service
- Certified OEM Parts
- UX - Unit Exchange



# Gardner Denver Nash Products & Systems



## NASH® Liquid Ring Vacuum Pumps & Systems

The reliable and durable solution for demanding process applications. Through ongoing commitment to innovation, Nash continues to introduce liquid ring vacuum pumps that meet the rigors of the most demanding applications while improving efficiency and lowering total cost of ownership.



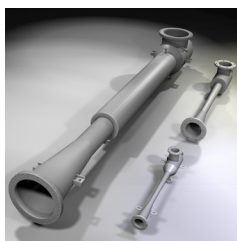
## NASH and GARO® Liquid Ring Compressors & Systems

The rugged, reliable solution for demanding process applications. Designed to handle toxic, explosive and corrosive gases, and backed by a reliable history of performance under the most demanding conditions.



## DRY-PRO® Dry Vacuum Pumps & Systems

Designed to meet your specific process needs, NASH engineered systems are ready for operation, easy to integrate into process automation, help minimize installation & operating costs, and meet the rigors of the most demanding applications.



## ENER-JET™ Ejectors & Systems

Whether on their own, or as part of a NASH ENER-JET Hybrid Vacuum System, NASH steam jet ejectors are engineered for optimum efficiency, reducing steam consumption, while maintaining their ability to handle large volumes at very high vacuum levels.

# NASH


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# Gardner Denver

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