

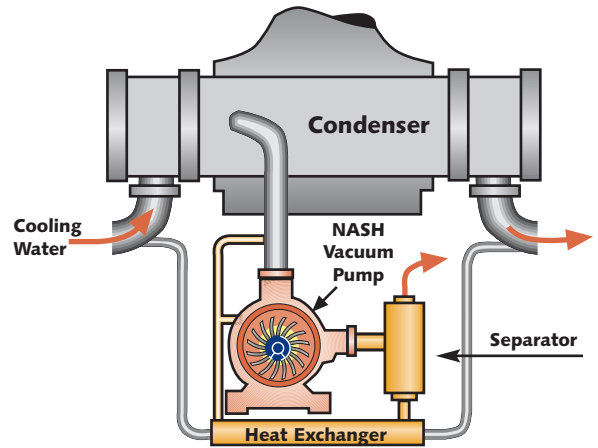
**Vacuum Pumps and Compressors for the
Electric Power Industry**



NASH Electric Power Generation Vacuum Systems

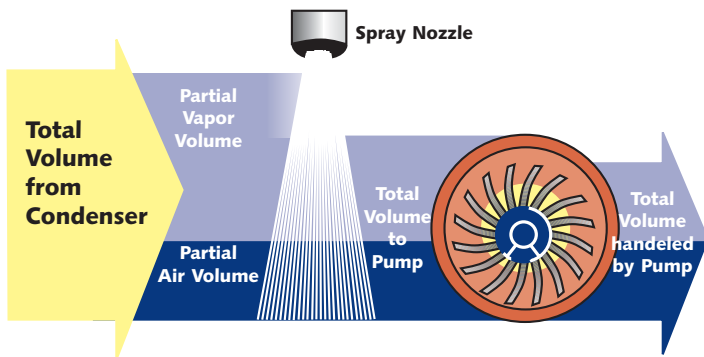
Condenser exhauster systems assure maximum power availability

Nash self-contained condenser exhauster packages in steam cycle plants efficiently remove inward air leakage from the condenser. The effect is to provide lower turbine backpressure, improve heat rates and reduce generating costs. The packages consist of a liquid ring vacuum pump (either a two-stage vacuum pump, or a single stage vacuum pump with air ejector), air-liquid discharge separator, heat exchanger and associated controls.



Two stage vacuum pump systems

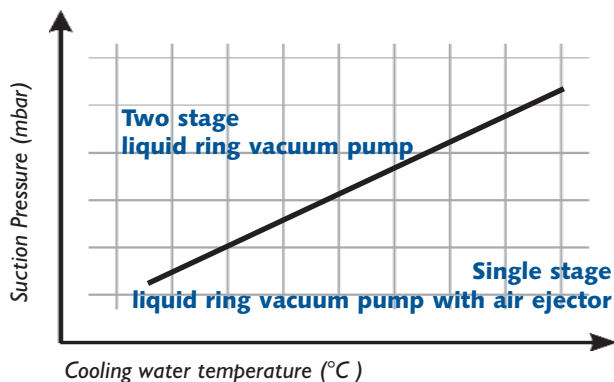
To realize a low absolute pressure, two stage liquid ring vacuum pumps are the perfect solution. They offer a low absolute pressure with a small and compact system design. Two stage vacuum pumps work best with water cooled condensers.



Capacity Bonus: You get more capacity and save energy when water vapor is condensed ahead of the NASH pump. This performance bonus is made possible by NASH conical porting.

Since more than two thirds of the gas drawn from the condenser is water vapor, the Nash conical ported design is ideal for handling this air-vapor mixture. Spray water condenses a substantial portion of the vapor ahead of the pump and, as that condensate passes through the pump as a liquid, pumping capacity is increased and energy saved. This is the Nash capacity bonus that is not possible with other pump designs.

Nash condenser exhausters perform reliably, operate automatically and hold the condenser at the best possible vacuum during unexpected transients of air leakage.



Operational area of two stage liquid ring vacuum pumps and single stage liquid ring vacuum pumps with air ejector

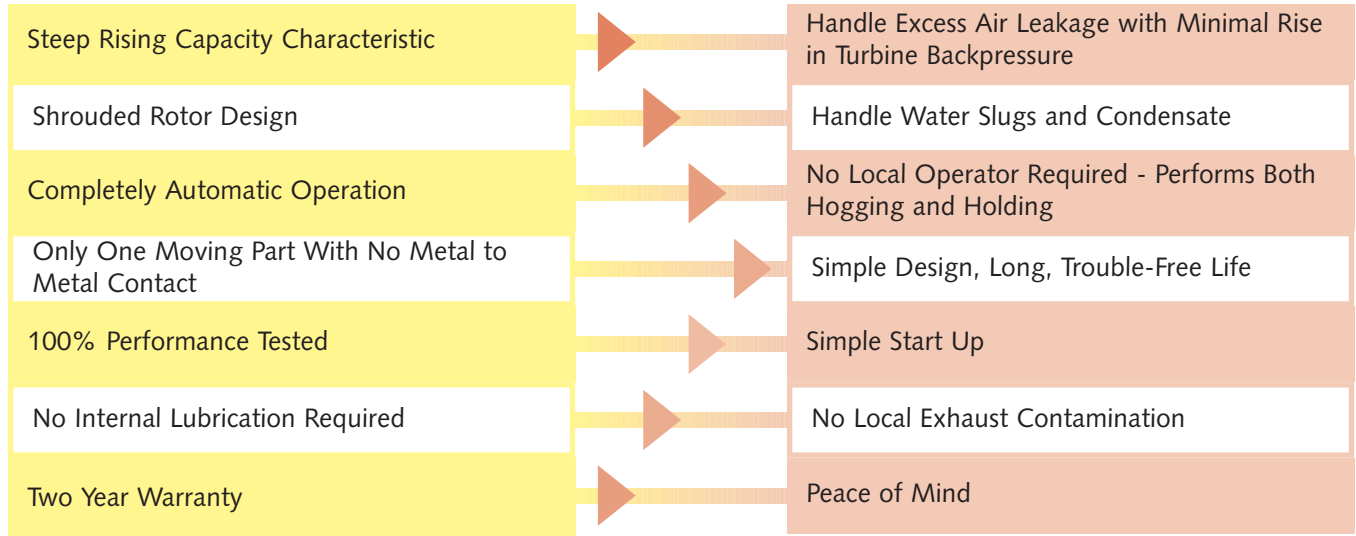


With a NASH condenser exhauster, your turbine backpressure rises very slowly under excess inward air leakage conditions.

NASH Electric Power Generation Vacuum Systems

Product Features

Customer Benefits



Hogging: Initial evacuation of the condenser to a pressure of 200 to 400 mbar abs. (6" to 12" Hg abs.) within a defined period of time before applying steam to the condenser.

Holding: Continuous exhausting of the air leakage into the condenser during normal operation in order to optimize the efficiency of the power generation.

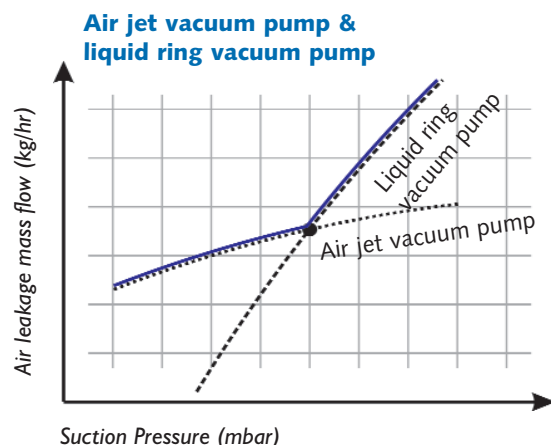
Single stage vacuum pump systems with air ejector

Condenser exhauster systems using the plant's secondary cooling water system

Power plants sometimes use the plant's secondary cooling water for cooling the condenser exhauster system. This means that the cooling water temperature of the condenser exhauster system is higher than the cooling water temperature of the main condenser cooling water, which limits the pump performance. As a solution, an air ejector is added as a first stage to the vacuum pump. Single stage vacuum pump systems with air ejectors can reach very low pressures, irrespective of the cooling water temperature.

Condenser exhauster systems for air-cooled condensers

The operating pressure of an air cooled condenser is a function of the air temperature, not the cooling water temperature. The performance characteristics of the pump and air jet package allow it to track the condenser pressure over the entire range of cooling water temperatures.

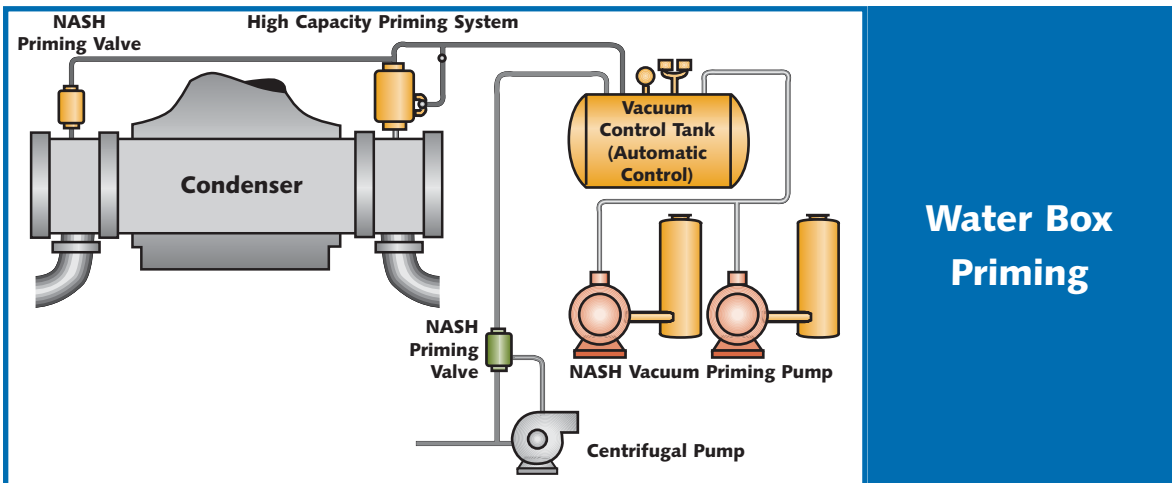
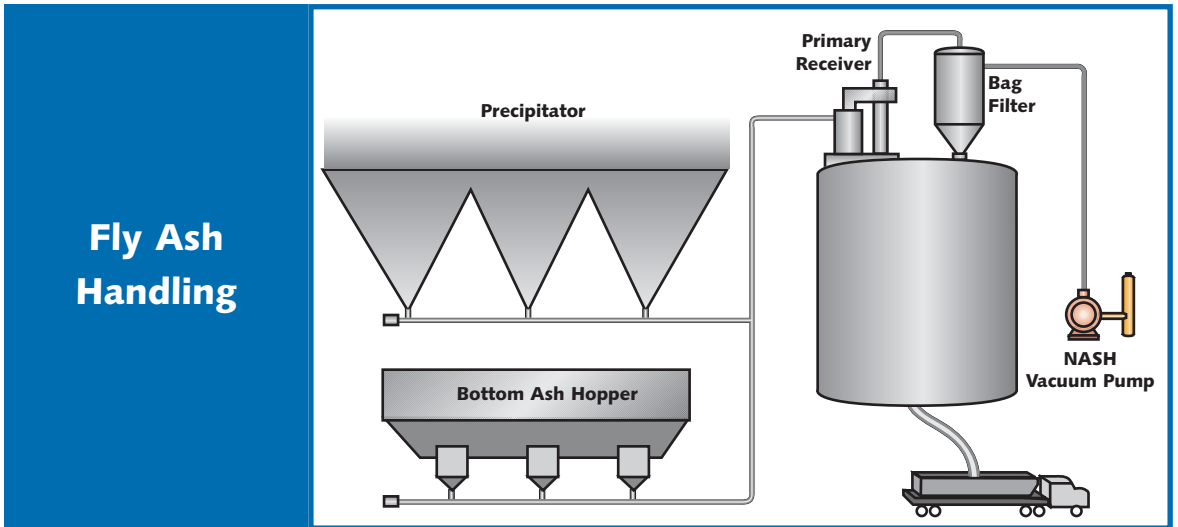
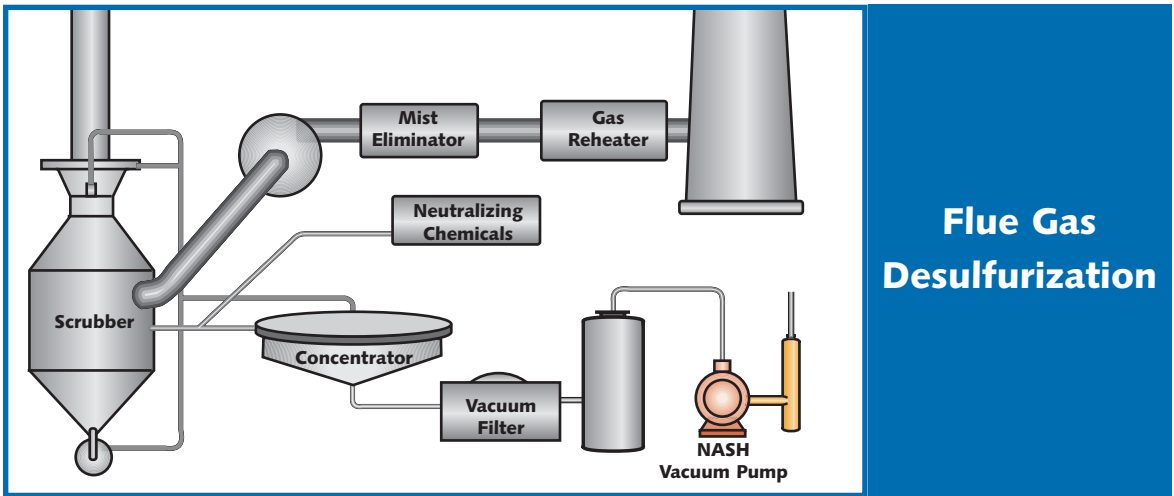


Extended operating range: Air jet vacuum pump & liquid ring vacuum pump

NASH Electric Power Generation Vacuum Systems

System solutions for every requirement

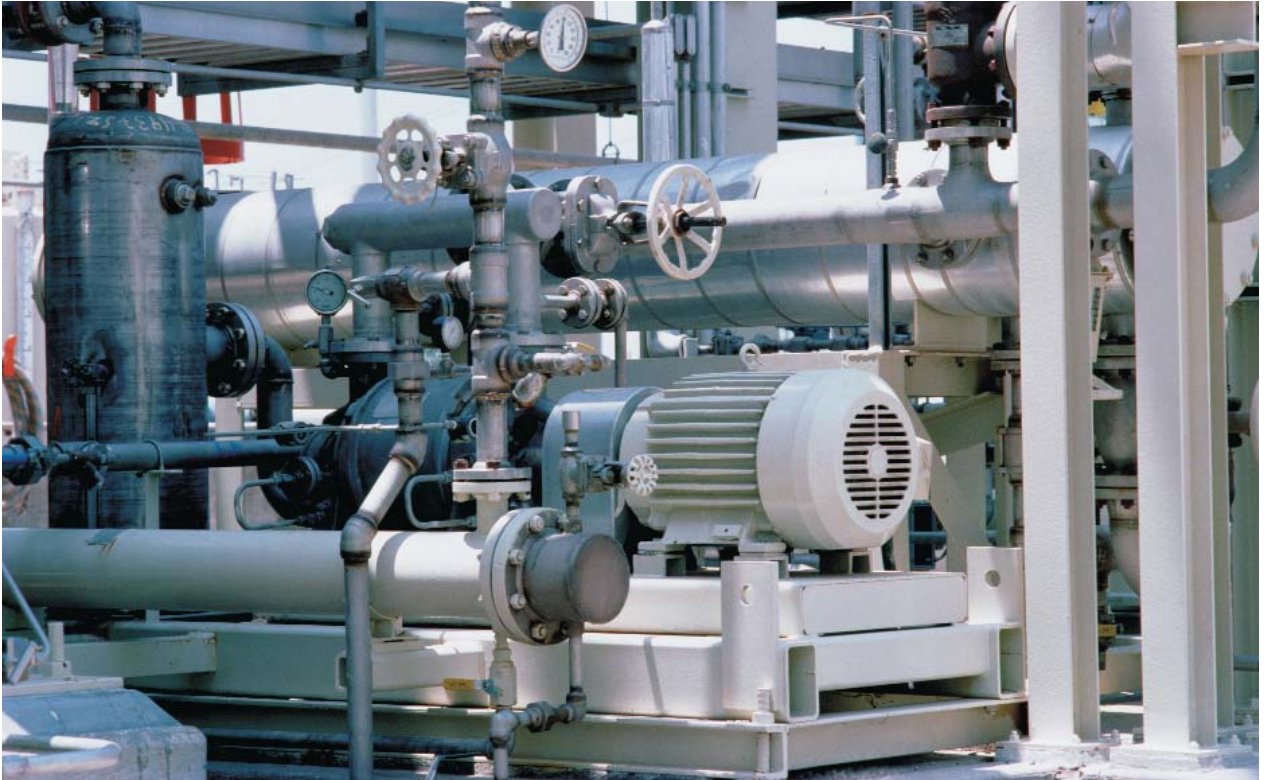
Nash also provides systems for other power plant applications. Many of these address environmental concerns by providing economical solutions for sludge de-watering, fly ash handling and flue gas desulfurization. Another application important to optimum condenser backpressure is water box priming. Your Nash representative will be happy to provide the necessary engineering data and specific recommendations to meet your needs. Nash has been a member of HEI since 1985.



NASH Electric Power Generation Vacuum Systems

Controlling worldwide electric energy costs

For over half a century, NASH systems have been the products of choice for air removal systems in steam cycle and geothermal power generation plants throughout the world. By reducing the energy loss due to increased turbine back-pressure, our vacuum systems save millions of dollars worth of energy every day.



Steam jet/vacuum hybrid system by Gardner Denver Nash at a Geothermal Power Station

Providing solutions for complete system reliability

Whether you are planning a new unit or a system upgrade, Nash sales engineers have years of application experience. Our expertise has been achieved through hundreds of installations. We will provide you with the right solution for your specific requirements.

- Manufacturer of liquid ring air removal systems for over 50 years
- Thousands of installations worldwide
- Complete systems engineered, designed and manufactured by Nash
- Our ability to provide the total vacuum system is unmatched in the industry
- Specifically designed for your power plant
- Manufactured in compliance with ISO 9001 standards
- 100% tested to HEI and/or PNEUROP requirements in our factories before shipment
- Warrantied for two full years

Global service and support

The Nash service organization is one of the best in the world. From startup supervision to solving operating problems and providing fast response to emergencies, our global sales and service organization is positioned to serve all of your needs wherever your plant may be. No other liquid ring pump supplier can make this claim.

Other NASH Products

TC/TCM

Integral 2 stage liquid ring pumps with improved performance at vacuum levels down to 0.8" HgA / 27 mbar abs
Designed to handle large amounts of liquid carryover without difficulty
Capacity of 170 to 3,740 m³/h with vacuum to 27 mbar abs
Capacity of 100 to 2,200 CFM with vacuum to 0.8" HgA



2BV

Compact liquid ring vacuum pumps built for serious cost savings
Use up to 50 percent less water than other liquid ring pumps
Monoblock and pedestal designs available
Capacity of 7 to 595 m³/h with vacuum to 33 mbar abs
Capacity of 4 to 350 CFM with vacuum to 29+'' HgV



2BE3/P2620

Large liquid ring vacuum pumps with superior corrosion resistance
Top discharge capability which eliminates need for trench
Self-recirculating seal water, reducing need for external seal water source
Capacity of 6,800 to 39,000 m³/h with vacuum to 31 mbar abs
Capacity of 4,000 to 23,000 CFM with vacuum to 29+'' HgV



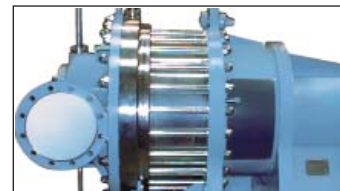
Vectra

Liquid ring vacuum pumps and compressors
Available in feature rich budget designs (XL or GL)
Designed to handle high back pressure requirements
Capacity of 195 to 4,860 m³/h with vacuum to 31 mbar abs
Capacity of 115 to 2,860 CFM with vacuum to 29'' HgV



Compressors

Highly rugged and reliable compressors that can handle highly toxic, explosive and corrosive gases
Specifically developed for applications such as flare-gas, chlorine and Vinyl Chlorine Monomer (VCM) recovery
Capacity of 100 to 3,400 m³/h with pressure to 15 bar abs
Capacity of 2,200 SCFM with pressure to 200 PSIG
Single and two stage models available



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