

**Reducing the energy consumption of vacuum systems
We'll show you how it can be done**

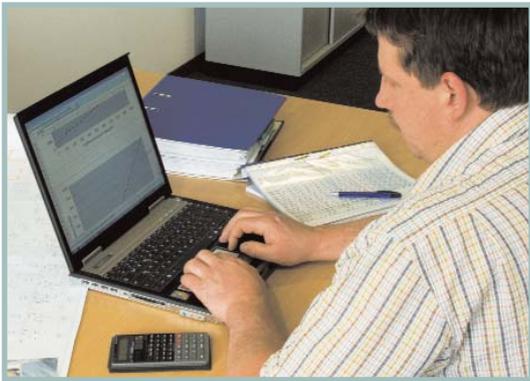


Plant optimization and energy saving

The complete solution from Gardner Denver Nash

The generation of vacuum is always associated with a considerable consumption of energy. This is reflected in turn, in direct costs. A vacuum system which is not operating at the optimum level of efficiency therefore offers a considerable potential for savings. Optimizing it by improving its efficiency will lead to significant savings not only in energy but as a result, also costs. Moreover, environmental pollution and harmful emissions will also be indirectly reduced.

Gardner Denver Nash looks back on over 100 years of experience of vacuum and compressor systems. We have an eye for plant as a whole and an expert understanding of the finer points of machines and processes. Our comprehensive service package can optimize your vacuum and compressor system and support you with measures for energy saving.



Analysis and evaluation

With our ultra-modern equipment, we will determine the parameters that affect energy consumption and the efficiency of the plant. We will check the shaft speed of the pump, calculate its electricity consumption and establish its suction and flow rate at predefined measuring points. Visual inspections of the pump, both internal and external, complete the process of assembling data. These are then evaluated, revealing every point at which performance is less than the optimum and at which improvements in efficiency can be made.



Developing improvements and solutions

The results of our checks, combined with our comprehensive know-how, enable us to determine which settings should be adjusted to optimize your vacuum and compressor system, even in complex processes. We will draw up a detailed test report and present the records and test data we have compiled to you. Our proposals for optimizing your system and energy saving measures will be based on this information.



Adaptation and system modification

When you decide in favor of one of our options, we will handle the required adaptation and modification of your system. In so doing, needless to say, we will make provision not only for your specific requirements and process parameters but also any structural restrictions.

Plant optimization and energy saving

Efficient actions from Gardner Denver Nash

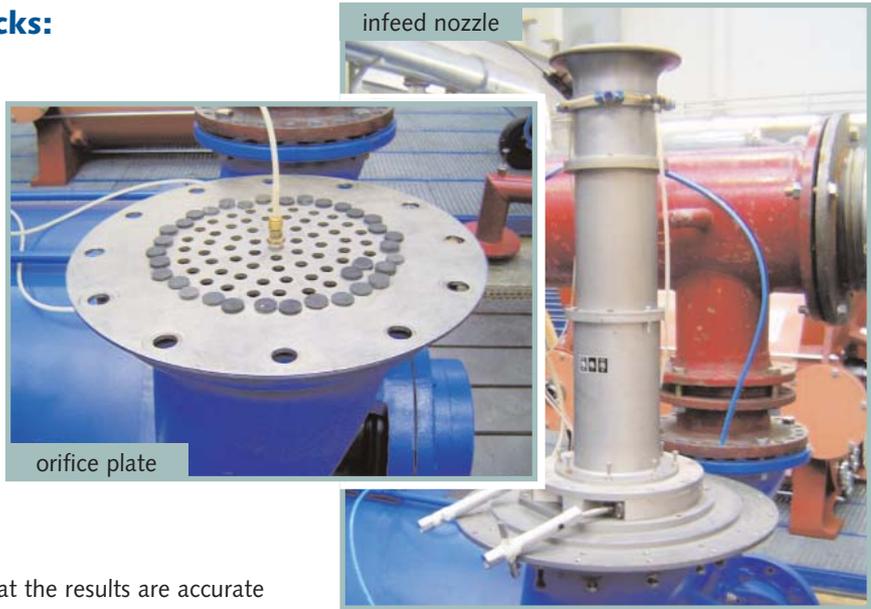
Gardner Denver Nash will support you with a comprehensive package of actions for saving on energy costs and reducing environmental pollution by ensuring the efficient economical operation of your plant.

Capacity and performance checks: precise measurements

The flow rate can be determined by a variety of methods. By using orifice plates, only a small gap between the vacuum pump and feed pipe is needed for measuring purposes. As a result several pumps can be tested in the minimum of time.

By means of the second method, using an infeed nozzle, the flow rates of a vacuum pump and of a compressor can both be tested. This measuring instrument is certified by the PTB (Physikalische Technische Bundesanstalt - Federal German Institute of Physics and Technology).

Our methods of checking flow rates ensure that the results are accurate to within $\pm 4\%$. To establish energy consumption, we check all the operating parameters with calibrated test instruments.



Fiberscope inspection

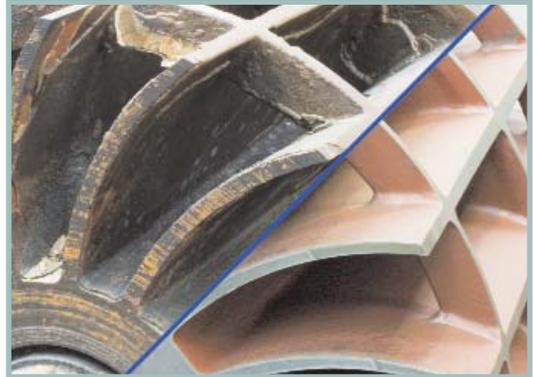
By means of an fiberscope examination, the interior of the pump, the rotor, the housing and the port plate/cones can be visually inspected. As a result, our trained service personnel can not only identify damage to the pump, even at an early stage, but also find any foreign objects inside.

Contamination adversely affecting efficiency and impermissible tolerances are thus identified and eliminated in good time. We can spot signs of wear and determine the condition of your pumps without dismantling the machine, then plan any repairs which may be necessary before a failure occurs. Gardner Denver Nash will carry out fiberscope inspections while the plant is stopped or at any other time appropriate to your operations.



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Pump cleaning

When we clean a pump, the lime scale deposits, which develop over time and adversely affect flow behavior are removed. Smooth surfaces improve the flow of gas and, as a result contribute to reduced energy consumption.

It is not necessary for pumps to be dismantled. We use special liquid solutions which ensure that they are cleaned thoroughly yet harmlessly.



Other services

Gardner Denver Nash offers a complete range of maintenance and repair services, either on site or at our Service Centers. All repairs are guaranteed to bring your pump up to 95 % of the capacity of a brand new equivalent. All new, reconditioned and repaired parts comply with the applicable specifications. Any technical improvements to individual parts are automatically passed on to the customer. Regular planned maintenance will also help you with cost management.



Plant optimization and energy saving - a simple Gardner Denver Nash formula:

$$\begin{aligned} & \text{Our Know-How} \\ & + \text{Our Commitment} \\ & \hline & = \text{Your Benefit} \end{aligned}$$

Our common objective is to improve the efficiency of your system.
You will benefit from our know-how and services.

Our know-how: **Over one hundred years experience of vacuum and compressor systems**

Our experience of vacuum and compressor systems goes back over a hundred years. We not only have an eye for plant as a whole but also an expert understanding of the finer points of machinery and processes.

Our commitment: **A network of service centers and professional staff**

Gardner Denver Nash operates a worldwide network of Service Centers, equipped with the latest technology. Our capable, highly motivated personnel can even provide on-site service.

Your benefit: **Plant optimization and energy savings**

With us, your plant will be in the best possible hands. You will benefit from the experience of our personnel and the modern equipment in our Service Centers, ensuring e.g.

- A reduction in the energy consumption of the plant
- Cost savings through lower energy and operating costs
- Improved flow rate
- Increased flexibility and improved service life of the plant
- Reduced life-cycle costs
- One contact, all services from one source
- Fully equipped Service Centers
- The use of OEM spare parts exclusively
- Easing the load on your personnel
- Service specialists with decades of experience



We have engineered liquid ring vacuum and compressor systems for more than 100 years.



And we provide best the NASH Service to make them run even longer.

You may have known us as Nash Engineering, Siemens/elmo, or nash_elmo. Now we are Gardner Denver Nash.

We have been manufacturing liquid ring pumps for more than 100 years, and we know how to make them run. And we provide the best NASH Service and know how to make them run even longer.



Best NASH Service for every pump model

Special NASH Service is available for the following NASH and Siemens/elmo liquid ring pump series:

2BE1..	2BE2..	2BE3..	2BG1..	2BK..	GARO
CL	AT	904	TC	Vectra	SC

Of course, we also provide the best NASH service for all liquid ring pumps, no matter who the manufacturer.



Locations

Our European Service Centers are located in

- Nuernberg, Germany
- Assendelft, The Netherlands
- Winsford, England

Our experienced service technicians check your pump, in our Service Centers or on site. Test us.



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