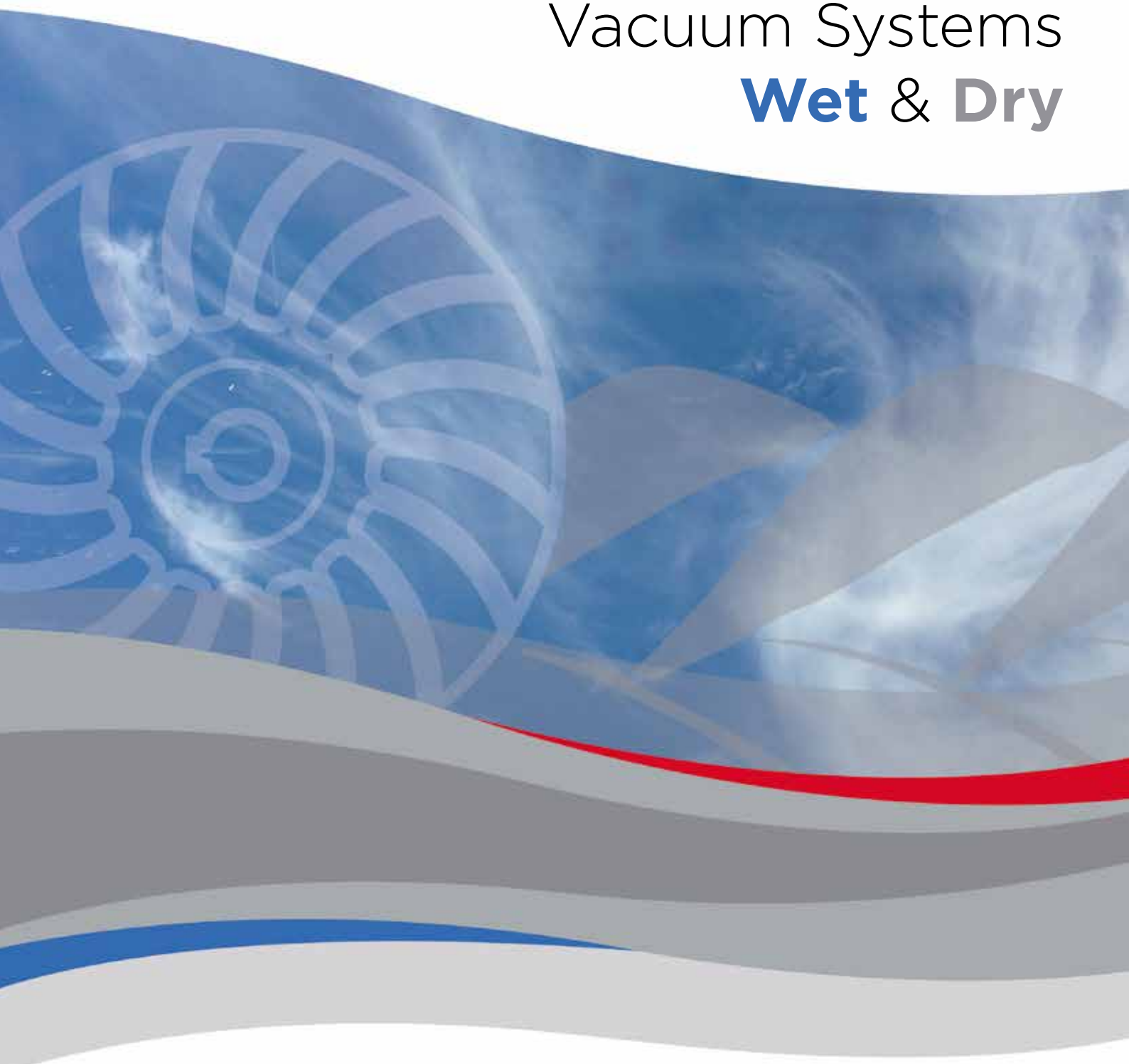
gieffe systems

by Gardner Denver

Vacuum Systems
Wet & **Dry**



Customised Packages for Tough Applications

gieffe
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We offer cutting-edge, custom-made solutions for vacuum applications that fit with customers' needs across a wide range of industries. We are committed to delivering complete systems and turnkey solutions based on each customer's choice of technologies. For every customer, we deliver a powerful combination of high-efficiency pumps, specially selected peripheral equipment, and skilled support from an experienced team.

- **Cost-effective systems**
- **High performance solutions**
- **Maximum product uptime**
- **Worldwide service network**

Recognised as global vacuum specialists, we respond to any requirement with the most competitive, cost-effective solution. Thanks to Gardner Denver's global service network, we are well placed to ensure the optimum performance of our systems and can support any aftermarket requirements.

Industries and Processes

Gieffe Systems provides innovative vacuum solutions to a wide range of applications and processes used in many industries.

These solutions reduce energy consumption, improve reliability and uptime, eliminate pollution and provide cost savings.

Food and Beverage

- **Filling and closing machines**
- **Evacuation**
- **Concentration systems**
- **Degassing**
- **Vacuum blenders**
- **Removal of impurities**
- **Vegetable oil refining**

Gieffe Systems supplied a customised vacuum unit with a total service liquid recovery for filling glass bottles. Other specific benefits of particular interest to the customer were:

- **Reduced water consumption**
- **High reliability**
- **Improved performance**
- **Reduced service costs**

Plastics

- **Extruder degassing**
- **Rubber degassing**
- **Solid-state polymerisation**

A well-known Italian OEM for plastic extruder industry chooses for its plants Gieffe Systems units with liquid ring vacuum pump and air ejector mounted in series.
This solution has proven a great success for its customers, which now benefit from outstanding energy performance, in addition to:

- **High reliability**
- **Improved performances**
- **Reduced maintenance costs**

Petrochemical

- Vapor recovery

Brick and Tile Industry

- Extruder degassing

Power Generation and Oil & Gas

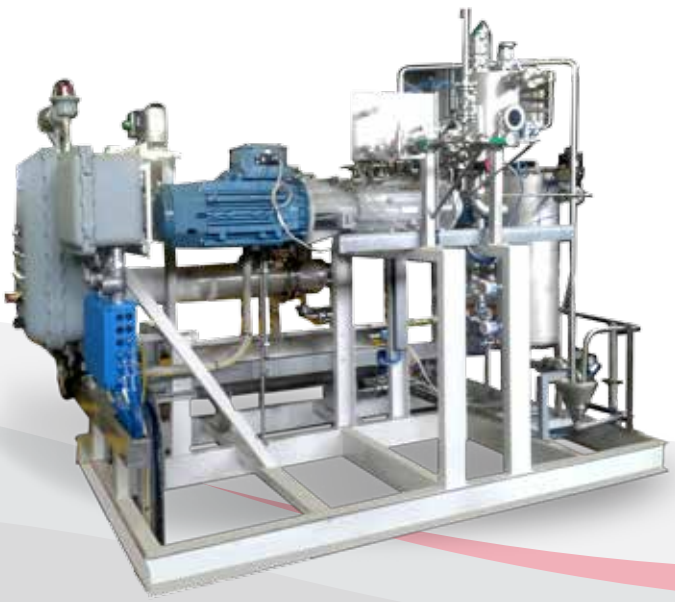
- Condenser evacuation
- Water distillation

Chemical and Pharmaceutical

- Coating
- Distillation
- Degassing
- Drying
- Impregnation
- Solvent recovery
- Thin layer evaporation
- Vapor recovery

A global leader in the pharmaceutical industry contracted Gieffe Systems to install four dry vacuum systems for drying processes.
Their confidence in Gieffe Systems have resulted in ongoing:

- **Energy savings**
- **Reduced maintenance costs**
- **Increased vacuum**
- **Solvent recovery**
- **Environmentally friendly elimination of pump discharge pollution**



Wet Systems

These solutions are equipped with liquid ring vacuum pumps and have a capacity of up to 4,000 m^3/hr and above, with vacuum of up to 1 mbar (abs) and above upon request.

The liquid ring vacuum units can be equipped with a partial or total service fluid recovery system.

Oil-sealed units with closed recirculation of oil through air/heat exchangers are also available.

OCS – Oil-Sealed Vacuum Unit

Oil-sealed vacuum unit consisting of a liquid ring pump with closed recirculation of oil through air/oil heat exchanger, fitted with an electric cabinet.

- **Capacity up to 800 m^3/hr**
- **Vacuum up to 15 mbar (abs)**
- **Power up to 30 kW**

Benefits at a glance

- **High performance**
  The physical properties of the sealing oils minimise degradation even at high operating temperatures, and improve the performance of a liquid ring pump, when compared to a pump operating with water.

- **Exceptional and constant vacuum**
  The vapour pressure, which is considerably lower than that of the water at 15°, and the perfect sealing of the liquid ring allow a powerful, constant vacuum, even at high gas temperatures.

- **No need for service water**
  Recirculation of oil in the pump and the use of a very low-power air/oil exchanger, allow the total elimination of water usage and therefore reduce operating costs.

- **Long uptime and low service costs**
  The circulation of oil allows deposit-free lubrication of the pump's internal parts, which are therefore protected from wear, equating to an extended operating life. The service and maintenance intervals are also extended, with low life cycle costs as a result.

- **Removing vapour-saturated gas**
  Exclusive built-in systems for separating extracted condensate from service oil, enables the removal of a high percentage of vapour-saturated gas. The clean condensate is then discharged.

- **Low noise levels**

Accessories

- Special horizontal separator mounted directly on the pump
- Accumulation tank with built-in trap, inspection port, level indicator, discharge valve and vent valve
- Special electric frame with overload relays for the auxiliary motor
- Main electric starter as per IEC EN60439-1 standards, completely cabled and supported
- Discharge gas scrubber with oil recovery and related certificate

Wet Systems

AM - AC - ACV
Liquid Ring Vacuum Units

- Capacity up to 4,000 m^3/hr
- Vacuum up to 33 mbar (abs)
- Power up to 132 kW

AM Series – Partial Fluid Recirculation

Liquid ring vacuum units with partial fluid recirculation, supplied with liquid/gas separator tank fitted directly on the pump discharge nozzle, or next to the pump.

Benefits at a glance

- Supplied with two-stage or single-stage pumps with a variable internal port
- Wide range of materials (combination of cast iron and stainless steel available)
- Separator tank and piping system in stainless steel
- ATEX Certification available

AC Series – Total Fluid Recirculation

Liquid ring vacuum units with total fluid recirculation for almost all gases and vapours, equipped with tubular or plate heat exchangers.

Benefits at a glance

- **Simple and modular construction**
- **Easy installation and operation**
- **Wide range of materials (combination of cast iron and stainless steel available)**
- **Available with full instrumentation for control, management and fully automated operation**
- **Available with a wired and skid-mounted electrical control panel**
- **ATEX Certification available**

ACV Series – Total Fluid Recirculation and Solvent Recovery

The liquid ring vacuum units with total fluid recirculation are provided with a suction condenser as well as a solvent recovery system and a condenser for residual gas. If required, it is possible to include all connecting pipes with flanged valves and joints, as well as measurement and control instruments such as a thermometer or vacuum and pressure gauges. The entire system is mounted on a single steel base.

Benefits at a glance

- **Thermal insulation of system components if working at low or high temperatures**
- **Compact and easy to install**
- **Wide range optimised for practically any requirement**
- **Sturdily built to ensure safe operation**
- **Energy saving due to minimum recycle times and use of condensers**
- **Easy to operate with low maintenance requirements**
- **Reduced noise and vibration**
- **All components in stainless steel**
- **ATEX Certification available**

Accessories

- Air or steam jet ejectors with bypass line and pressure equalisation line
- PD blower
- Flow switch
- A wide range of accessories and instruments available on request

Wet Systems

Customised Liquid Ring Vacuum Units

Single or multi-stage vacuum systems with liquid ring vacuum pumps, air or steam ejectors and PD (positive displacement) blowers, arranged in different configurations according to customer specifications.
ATEX Certification available.

Benefits at a glance

- **Start up time reduction**
- **Steam consumption saving**

Meet our Customers

Power Station with improved vacuum speed

To reduce the emptying condenser time and improve energy savings, a prominent Italian power station upgraded its steam ejector-based system with a liquid ring vacuum skid from Gieffe System, featuring total recirculation of the service liquid.
The installed system removes air and vapour from the condenser behind the steam turbine and works up to 100 mbar(a) with a maximum capacity of 1,815 m^3/h.
It consists of a liquid ring vacuum pump mounted on a skid, and includes piping, a separator tank, a heat exchanger, valves, pressure transmitters, a pressure gauge, temperature transmitters, a temperature gauge, and a junction box.

The Case Study

Application	Requirements	Performance	Solution
Power station emptying condenser	Replacement of steam ejectors in order to reduce the emptying condenser time	Inlet pressure up to 33 mbar(a) Capacity up to 3,350 m^3/h	Vacuum system with liquid ring vacuum pump

Meet our Customers

Enhancing Fruit Juice Plant Production

Recently, a leading food company from Switzerland selected the highly experienced team from Gieffe Systems to deliver an efficient, modern solution for fruit juice production.
A high vacuum skid consisting of two independent double stages allows fruit juice concentration at low temperatures without any deterioration. One stage is based on a liquid ring pump and PD blower and the second is composed of a liquid ring pump and air ejector.

Benefits at a glance

- **High reliability**
- **Low-cost maintenance**
- **Working flexibility**
- **High vacuum speed**

The Case Study

Application	Requirements	Performance	Solution
Drying process in food industry	Two independent double-stage vacuum systems installed on the same base frame	Inlet pressure 8 - 15 mbar(a) Capacity up to 4,000 m^3/h	Two independent double stages based on liquid ring pumps and a PD blower

Dry Systems

Customised Single & Multi-Stage Dry Screw Pump Systems

Customised single or multi-stage vacuum units from Gieffe Systems are fitted with high-performance dry screw vacuum pumps and PD (positive displacement) blowers in a series of different combinations.
ATEX Certification available.

Meet our Customers

High Performance Achievement

One of Italy's main manufacturers of elastomeric-thermoplastic compounds installed a new, top-performing centralised vacuum system for 9 extruders.
Thanks to the expertise of Gieffe Systems' engineers, it was possible to replace an old and inefficient liquid ring vacuum pump system with a turnkey dry solution.
The new and cost-effective vacuum system is now equipped with two dry screw pumps in parallel.

Benefits at a glance

- **Improved vacuum to achieve better degassing**
- **No water pollution**
- **Environmentally friendly without water consumption**
- **Minimal service costs**
- **Energy savings**

The Case Study

Application	Requirements	Performance	Solution
Centralised vacuum system for 9 extruders	Increased efficiency	Inlet pressure up to 80 mbar(abs)	Dry Vacuum system with two screw pumps in parallel

Benefits at a glance

- **Energy saving**
- **Increased vacuum**
- **Environmentally sustainable system**

Meet our Customers

Environmentally Friendly Solution

For many years, effective and eco-friendly solutions have been in great demand across the food industry.
In traditional vegetable oil refinement production for example, achieving a vacuum relied on steam ejectors requiring considerable amounts of water and causing significant system instability.
For a palm oil refiner in Italy, Gieffe Systems' specialists replaced this outdated equipment with a modern, three-stage vacuum solution equipped with screw pumps and a PD blower in series.

The Case Study

Application	Requirements	Performance	Solution
Vegetable oil and fats refinement in food industry	Replacement of steam ejectors	Inlet pressure up to 1,5 mbar(abs) Capacity up to 45,000 m^3/h	Three stage vacuum system equipped with screw pumps and a rotary lobe in series

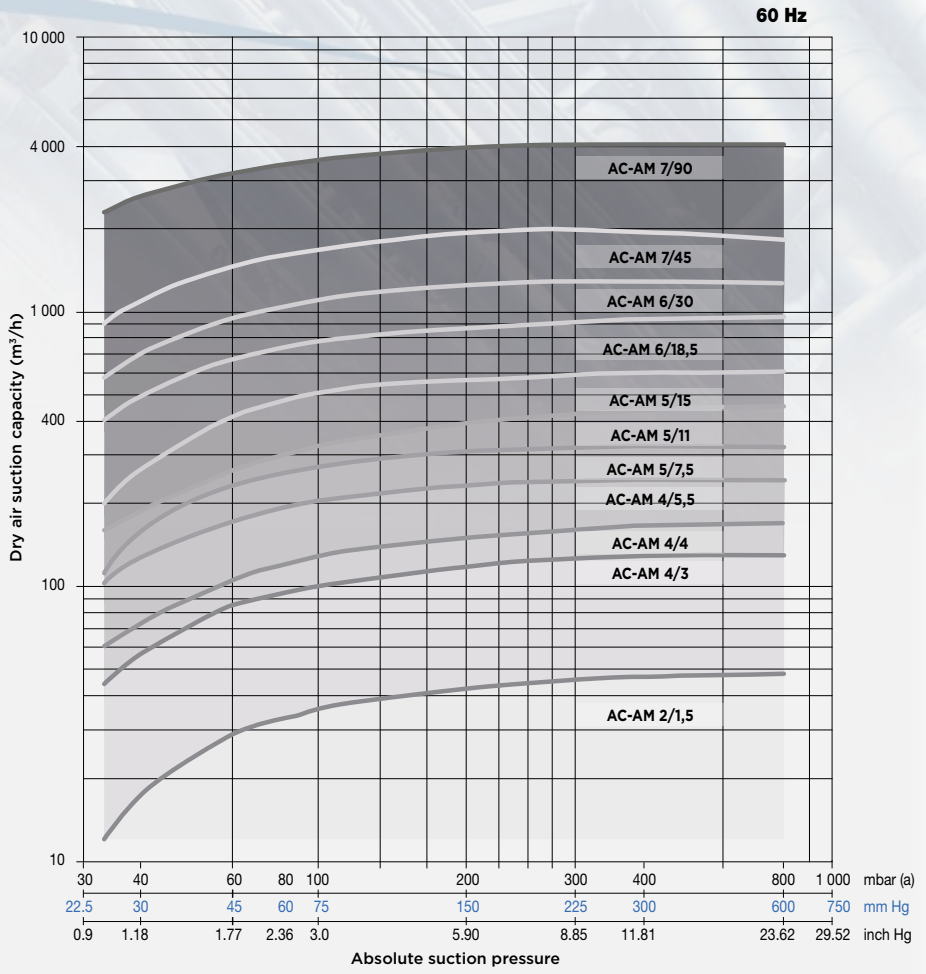
Wet Systems
Performances

AC - AM Series
Air Map

Liquid ring temperature: 15°C

Curve referred to dry air at 20°C (68°F)

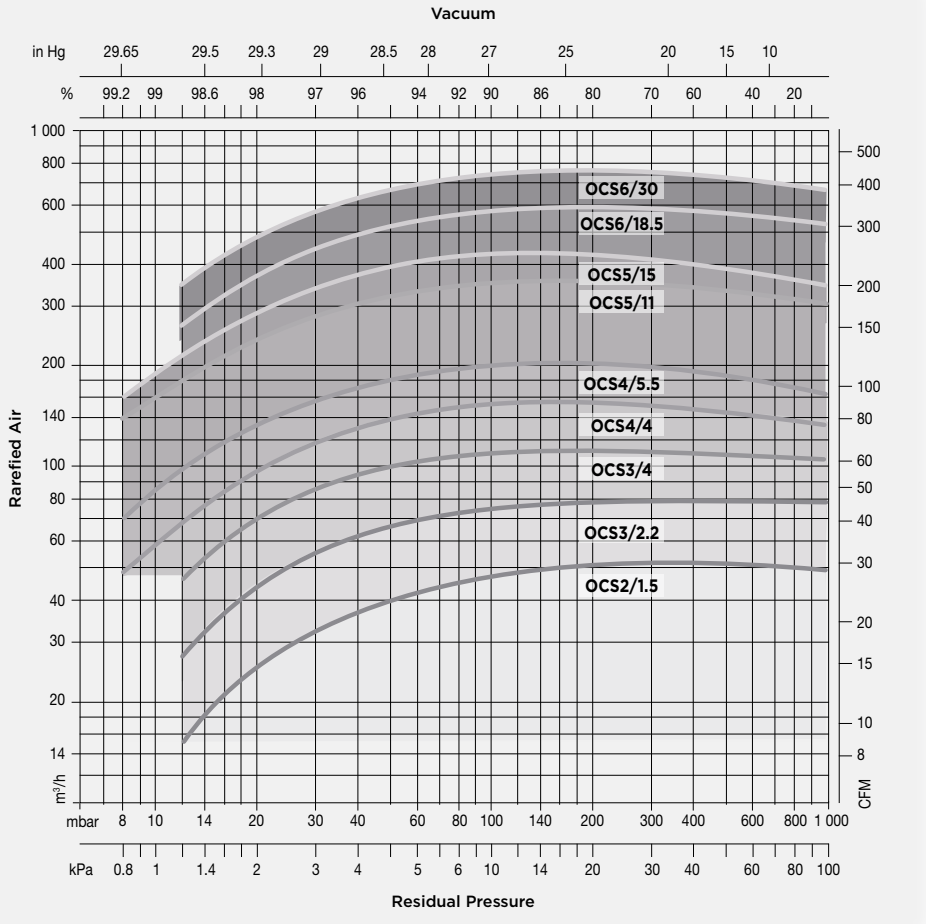
Discharge Pressure 760 mm Hg (30 in.Hg)



OCS Series
Air Map

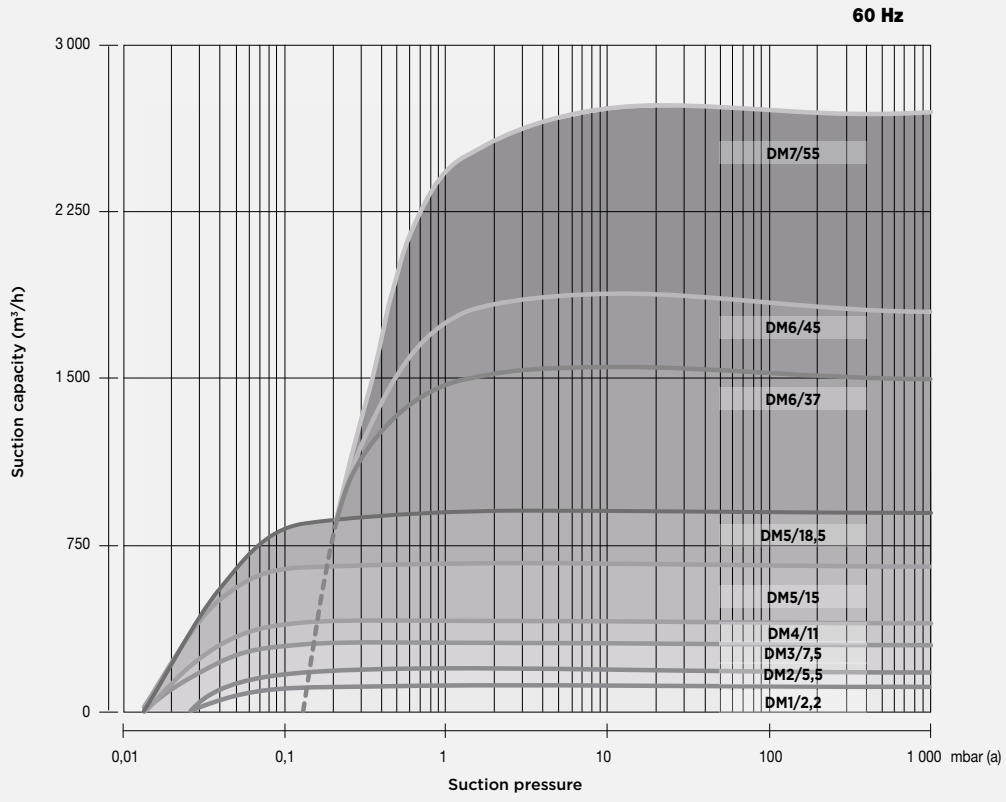
Curve referred to dry air at 20°C (68°F)

Discharge Pressure 760 mm Hg (30 in.Hg)



Dry Systems
Performances

Screw Pump
Air Map



Gardner Denver

The Ultimate Vacuum Solution

- Cost-effective
- High performance
- Maximum product uptime

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