



GALILEO PM
VARIABLE SPEED
DIRECT DRIVEN
SCREW COMPRESSORS
WITH PERMANENT
MAGNET MOTOR



**POWER
SYSTEM**
Air Compressors

from 9 up to 180 kW
from 7.5 up to 10 bar

GALILEO PM

Variable speed direct driven screw compressors

Our highly reliable industrial technology

ENERGY SAVING

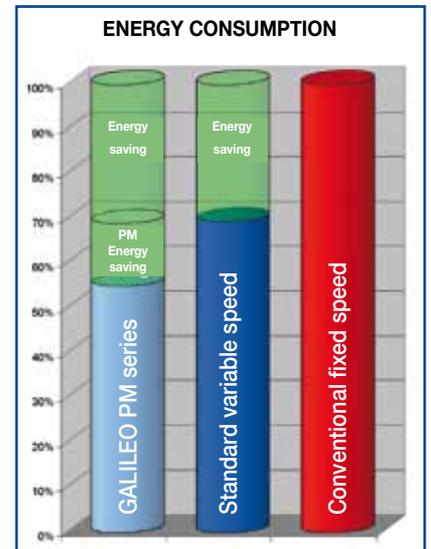
Compressed air is used in all industries, it can be very expensive if incorrectly operated. Measurements conducted on a typical application show how the air demand varies constantly during the daily or weekly cycles.

The compactness of the GALILEO PM series motors allows a more efficient direct drive arrangement to our advanced rotary screw compressor element providing simplicity and maximum energy efficiency. This system does not employ either drive belts or gears and so we avoid

the significant energy losses that affect other drive systems. The coupling of the PM motors with the latest generation screw compressor air-end, provides the most advanced drive system resulting in minimal energy losses. The improved efficiency and reduced energy losses achieved using our new PM motor and drive technology result in a significant reduction in energy consumption. When compared to traditional compressors, the advantages of these advanced new machines may be summed up as follows:

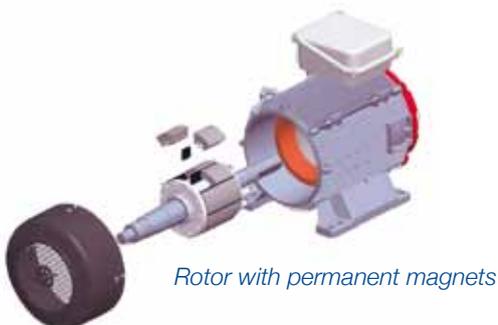
1. Elimination of the electricity adsorption peak on start up;
2. Improved motor efficiency due to a reduction in energy losses within the rotor;
3. Optimization of the energy consumption of the compressor that is precisely proportional to the demands of the compressed air system;
4. Elimination of the wasted compressed air during ON-OFF regulation determined by the need to depressurize the air-oil separator vessel during the 'off load' operation of the compressor;
5. Reduced wear to the mechanical parts, rotors bearings and motor, with the consequent reduction in the maintenance costs.

The GALILEO PM compressor series provides substantial energy savings, up to 40% compared to traditional fixed speed air compressors and more than 10% when compared to standard variable speed compressors.

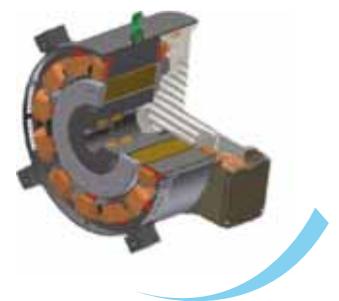


POWER SYSTEM'S GALILEO PM RANGE

Power System Group are always at the forefront in the research and development of high efficiency air compression systems, our technology exceeds national and international standards for energy efficiency thanks to our unique combination of Permanent Magnet Motor and the most advanced variable speed drive.



The permanent magnet synchronous motors, in combination with a frequency converter, represents the most modern technology available in the field of electrical drives with variable speed.



with permanent magnet motor



OBJECTIVES

- To reduce energy and environmental costs
- To optimise variable speed control technology
- To increase efficiency in all areas of the compressors operation
- To eliminate losses and wastage during operation
- To provide compact, modern and convenient solutions

Why permanent magnet motors?

1. ASYNCHRONOUS Motor with INDUCTION

The magnetic field on the Rotor is induced by the Stator currents.

- Part of the current absorbed from the mains is used to 'induce' the magnetisation of the rotor
- The shaft rotation speed is less than the rotation speed of the magnetic field generated by the stator winding (slip)



2. SYNCHRONOUS Motor with Permanent Magnets

The magnetic field on the Rotor is generated by permanent magnets inserted in the rotor

- It does not use part of the absorbed current to generate the magnetic field on the rotor: providing greater yield
- The rotation speed is synchronised with the supply frequency: allowing steady rotation speed independent of the resistance torque



HIGHER EFFICIENCY

The main characteristics of the permanent magnet motor can be summarized as follows:

- High flux density
- High efficiency and high power factor
- Very high range in operating speed
- High and constant torque over a wide speed range
- High power to weight ratio
- Compact design
- Wide torque/inertia ratio, ensuring instant acceleration
- The benefits of wide power range with aluminium casing
- With the same torque, our permanent magnet motor is one third the weight of an asynchronous motor
- Reduced weight to the compressor package
- Convenient transportation
- Simplicity of installation



AIR END

The core of the GALILEO PM Series compressors is the reliable and efficient rotary screw air-end. Proven worldwide as trouble-free and with low maintenance characteristics.

PERMANENT MAGNET MOTOR

The unrivalled high efficiency motor maximizes the advantages of our drive and variable speed technology with the added safety provided by IP55 insulation class.

VARIABLE SPEED DRIVE

The variable speed drive allows the continuous adjustment to the compressors speed and therefore air output. This allows for the compressed air generation to precisely match the system demands at all times. The oversized heat exchangers within the drive allow cooler operation in severe conditions.

DIRECT DRIVE TRANSMISSION

The simple direct drive system with elastic coupling provides the most energy efficient drive transmission with the added benefits of: lower noise levels, reduced vibration, fewer components and lower maintenance.

ELECTRICAL STARTER

The large electrical enclosure contains all components including the variable speed drive system, controller and external control interphase.

COOLING SYSTEM

The oversized coolers guarantee low operating and compressed air discharge temperatures, even in severe operating conditions. The employment of a thermostatically controlled cooling fan and a thermostatic valve within the oil cooling system ensure optimum operating temperatures eliminating the risks of condensate contaminating the lubricant and damage to internal components.

FAN MOTOR THERMAL PROTECTION

The fan motor is protected with thermal over load protection increasing reliability and safety.

SIMPLE CONNECTION

All internal pipe work and electrical connections are completed allowing for a quick and convenient installation.

VIBRATION DAMPERS

Vibration damping pads and flexible pipe reduce the vibration transmission and noises.

SILENCED ENCLOSURE

Doors, panels and enclosure are insulated with acoustic material which, in addition to a reduction in mechanical noise, provides very quiet operation.

ROOF MOUNTED AIR EXHAUST OUTLET

Cooling air discharged on the top of the cabinet. Easy connection with exhaust or heat recovery ducting.

EASY ACCESSIBILITY

Door and panels remove easily to ensure convenient accessibility for maintenance and inspection operations.

AIR PRE-FILTER

A large pre filter fitted to the cabinet ensures that the internal components including the main coolers remain clean.

AIR FILTER

Heavy duty encapsulated air filter with two-stage filtration (2 micron).

AIR-OIL SEPARATOR

High efficiency three-stage separation system provides the highest quality compressed air.

LONG-LIFE COOLANT

Long life semi-synthetic coolant ensures safe operation, reduced maintenance and service costs, and thanks to the separating properties, reduced quantity of coolant passed downstream.

AUTOMATIC CONDENSATE DRAIN

The automatic condensate drain allows convenient removal of the water that is condensed within the condensate separator fitted to the machine.

INTEGRATED DRYER

Models up to and including 75 kW can be fitted with the optional integrated refrigerated dryer. This system provides high quality, dry compressed air in a space saving and highly convenient format.

WATER HEAT-RECOVERY (Optional)

An optional heat recovery system is available that provides hot water (typically up to 65°C) as a by-product of the compressors cooling system. This system can replace conventional heating systems thereby saving significant amounts of energy, reducing costs further.



with permanent magnet motor



INTELLIGENT CONTROLLER

The controller continuously monitors the operation of the machine in order to ensure optimum efficiency and safety. The advanced controller is able to make adjustments to the compressors operating speed in accordance with varying demand and in this way maximum energy savings are achieved. This “intelligent” control provides two further benefits: firstly the compressor is allowed to run more slowly when required reducing noise levels, the second benefit being the precise control of the cooling system that eliminates the risk of condensate contamination in the oil circuit.

DNAir Maxi (from 110 up to 180 kW)

Complete interface with multi-language support. Programmable daily and weekly shift programming in line with shift pattern or other time dependent situations.

The controller includes facilities for: diagnostic checks, adjustment to operating parameters, maintenance programming and safety checks. DNAir Maxi allows networking via the CAN-Bus interface and the control/sequencing of up to 4 compressors.



EPS4.3

(from 9 up to 90 kW)

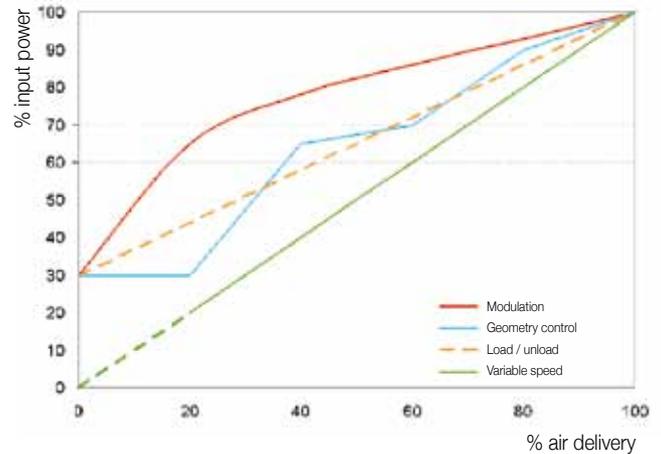
User friendly multi-language interface with fault diagnostic, programmable maintenance, network operation, remote control and auto-restart function.



VARIABLE SPEED DRIVE

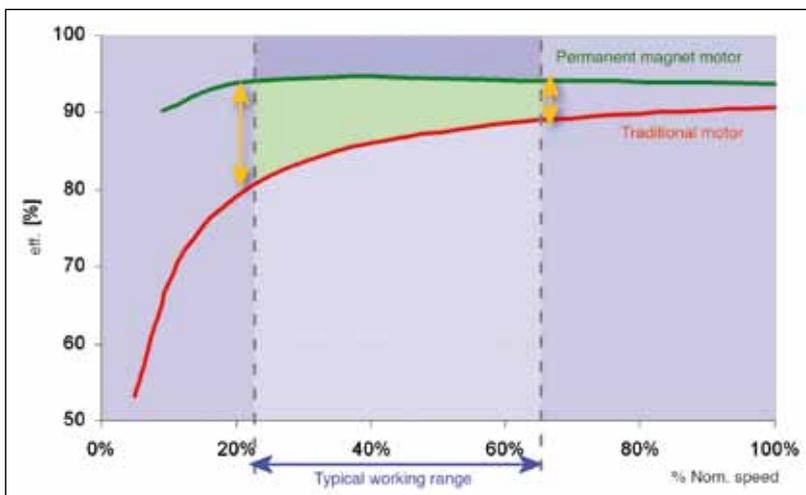
A conventional fixed speed air compressor is controlled by an inlet valve that moves between open and closed position, operating continuously in either of these two positions. Using the inlet valve to meet system air requirements results in a large amount of wasted energy during unload operation and in large fluctuations of the line pressure. The inlet valve could be modulated between the open and closed position achieving an air delivery regulation but with the introduction of “choking” losses in the suction port. Another way to vary the air delivery could be to change the geometry of the air end but this introduces further efficiency losses caused by the modified compression ratio. The application of a frequency inverter that varies the speed of the motor and of the compressor, offers many advantages:

- Regulation of the speed of the motor to match constantly the plant air demand;
- Provides a constant air pressure selectable to any value between 6 and 10 bar;
- Air output constantly varying between 25% and 100% of the compressors total capacity;
- Energy consumption proportional to the air delivered.



EFFICIENCY + RELIABILITY = PRODUCTIVITY

The key advantage of the synchronous permanent magnet motor is the magnetic flux being produced by the magnets themselves without generating any losses. Consequently, at the same torque, the electrical current drawn by the motor is significantly lower than for asynchronous motors. This means that the principal source of power loss is eliminated, making for a considerable advantage in efficiency. The constancy of the torque generated by the permanent magnet motor, together with the guaranteed high levels of efficiency throughout the range and variation of speed, is the best drive system for screw compressors, providing constant torque, at constant operating pressure, at different speeds.



The innovative design of the magnet and the patented radial magnet technology greatly increases efficiency by almost 10% to levels approaching 98%, with a size reduction of around 50%. Reliable, energy saving, low maintenance and proven systems adding to your efficiency and providing a better environment.

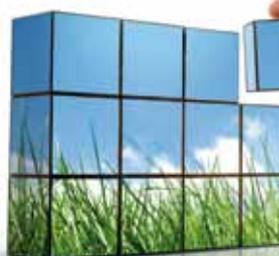
with permanent magnet motor

Model	Max pressure		F.A.D.				Power	Noise level	Weight	Dimensions
	bar max	Psig max	m ³ /min MIN MAX		CFM MIN MAX		kW-HP nom.	dB(A)	Kg	L x W x H (mm)
GALILEO PM 1309-7.5	7.5	109	0.37	1.57	13	55	9-12	64	180	1160 x 597 x 1034
GALILEO PM 1309-10	10	145	0.41	1.33	14	47	9-12			
GALILEO PM 1315-7.5	7.5	109	0.41	2.60	14	92	15-20	65	190	
GALILEO PM 1315-10	10	145	0.50	2.30	18	81	15-20			
GALILEO PM 1518-7.5	7.5	109	0.42	3.20	15	113	18.5-25	69	340	1120 x 750 x 1092
GALILEO PM 1518-10	10	145	0.50	2.80	18	99	18.5-25			
GALILEO PM 1522-7.5	7.5	115	0.43	3.62	15	127	22-30	69	360	
GALILEO PM 1522-10	10	145	0.58	3.31	21	117	22-30			
GALILEO PM 2030-7.5	7.5	109	0.84	4.90	30	173	30-40	69	550	1410 x 800 x 1500
GALILEO PM 2030-10	10	145	0.96	4.40	34	155	30-40			
GALILEO PM 2037-7.5	7.5	109	1.78	6.00	63	212	37-50	69	570	
GALILEO PM 2037-10	10	145	1.70	5.36	60	189	37-50			
GALILEO PM 3145-7.5	7.5	109	2.30	7.80	81	275	45-60	73	900	1804 x 1100 x 1780
GALILEO PM 3145-10	10	145	1.40	6.50	49	230	45-60			
GALILEO PM 3155-7.5	7.5	109	1.60	9.70	56	343	55-75	73	1000	
GALILEO PM 3155-10	10	145	2.30	8.75	82	309	55-75			
GALILEO PM 3175-7.5	7.5	109	3.20	12.9	113	456	75-100	73	1200	
GALILEO PM 3175-10	10	145	3.20	11.3	113	399	75-100			
GALILEO PM 3195-7.5	7.5	109	3.20	15.6	113	551	90-125	74	1440	
GALILEO PM 3195-10	10	145	3.20	13.2	113	466	90-125			
GALILEO PM 4110-7.5	7.5	109	3.20	19.0	113	671	110-150	74	1600	2380 x 1300 x 1780
GALILEO PM 4110-10	10	145	3.30	16.2	116	572	110-150			
GALILEO PM 5132-7.5	7.5	109	4.60	22.2	162	784	132-180	75	2400	2900 x 1550 x 2155
GALILEO PM 5132-10	10	145	5.20	19.0	184	671	132-180			
GALILEO PM 5150-7.5	7.5	109	5.00	26.6	177	939	150-200	75	2600	
GALILEO PM 5150-10	10	145	5.20	22.9	184	809	150-200			
GALILEO PM 5180-7.5	7.5	109	6.00	30.0	212	1059	180-250	75	2620	
GALILEO PM 5180-10	10	145	7.00	26.0	247	918	180-250			

The air flow rates have been measured at the following working pressures: 7 bar for mod. 7,5 bar - 9,5 bar for mod. 10 bar.

The data and performances were recorded in accordance with standard ISO 1217.

The sound level was measured in accordance with PNEUROP/CAGI standards.



THE COMPANY

Since 1992 Power System has been an indisputable leader in the design, development, production and worldwide distribution of industrial premium quality Rotary Screw Compressors in a power range from 2.2 to 315 kW satisfying air demands up to 50 m³/min. suitable for any technology sector, from the largest industry to the smallest enterprise. Power System has, since its very beginning, been engaged in a Research mission aimed to create advanced solution to compress air with the lowest possible energy impact.



Power System is dedicated to providing maximum value and security to all clients whilst delivering advanced technology that works.

Quality Certifications:

- UNI EN ISO 9001:2008 Vision 2000 (TÜV)
- Russian GOST-R Certification

Products Certifications:

- EC European Directives
- RINA-LLOYDS-REGISTER on request
- MOM for Singapore

**We fear no
comparisons.
Choose quality!**



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