



OPTIMA



Compressed air energy costs

PROTECT THE ENVIRONMENT AND SAVE ENERGY WITH COMPRESSED AIR

Greenhouse effect, ozone layer and the planet's changing climate are just a few of the issues that have interested public opinion in recent years bringing environmental protection and energy saving to light. Companies who rationally produce and use compressed air can contribute to environmental protection through energy savings, as well as decreasing their operational costs. Many public boards in North America have established awareness campaigns aimed at compressed air users. Mattei, as a compressor manufacturer, is also fully aware and involved in environmental aspects and has based its research on the improvement of the efficiency of its compressors, reaching a higher energy saving.

ENERGY COSTS

Compressed air is widely used in many industrial sectors, because its production, handling and use are safe and easy.

Compressed air generation consumes 10% of industrial consumption of electricity.

In spite of this, often the energy efficiency of many compressed air systems is very low, with a consequent increase in operating costs. Moreover, research has discovered that the average use of compressors reaches 70% of their full capacity. This means that savings over 30% can be obtained if air systems are suitably sized.

ENERGY EFFICIENCY

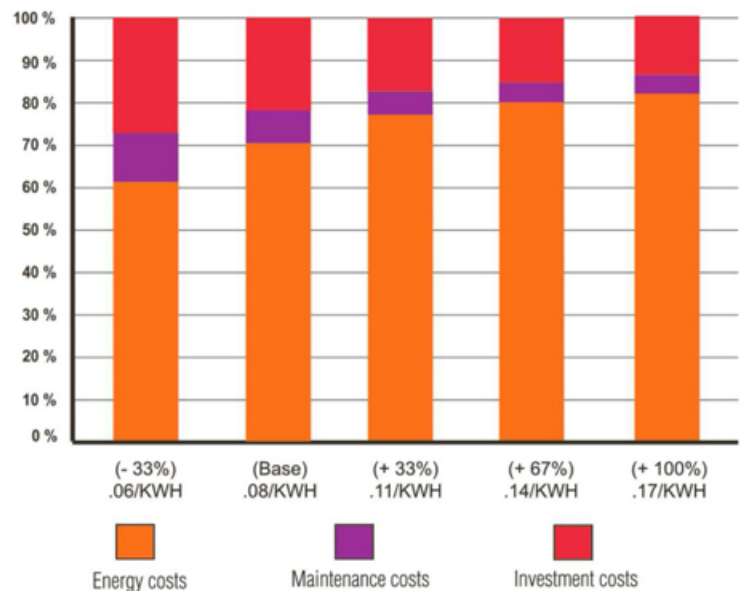
The energy efficiency and the compressed air cost partly depend on efficiency of the compressors used in the production processes and on their optimal configuration, but they are also influenced by other important factors:

- Quality of the cooling system
- Waste heat recovery
- Reduction of air leaks
- Maintenance quality



ENVIRONMENTAL IMPACT

The adoption of energy saving measures will produce a decrease of the impact on the environment, due to a reduction of CO₂ emissions, complying with the recent international agreements. In fact, energy savings reduce fuel consumption and related polluting emissions.



LCC (Life Cycle Costing) of a compressor with variation of electricity prices

	Energy savings (TWh/year)	CO ₂ emission reduction (Mtons/year)
Reducing air leaks	12,8	5,2
Overall system design	3,6	1,5
Recovering waste heat	3,2	1,3
Speed regulators	3,0	1,2
All other measures	7,8	3,2

EVALUATING COMPRESSED AIR



It is very important to know the exact air needs of the user, together with the depreciation period and all other variables that will help to determine the alternative with the lowest energy consumption. Measuring the compressed air and energy consumption are essential to find out if changes in the servicing or investments in

equipment could be cost effective. There is no best compressor in absolute terms, but the best combination between the specific compressed air need and the compressor can always be found.

TYPICAL USER PROFILES

Profile 1

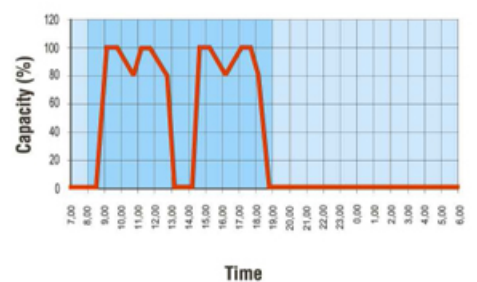
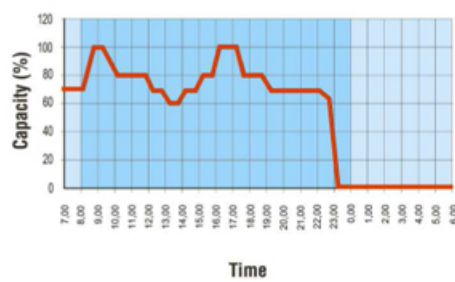
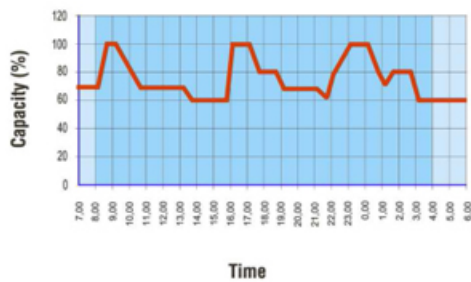
The unit runs 24 hours on 24 for 7 days a week with consumption variability between 70 and 100%.

Profile 2

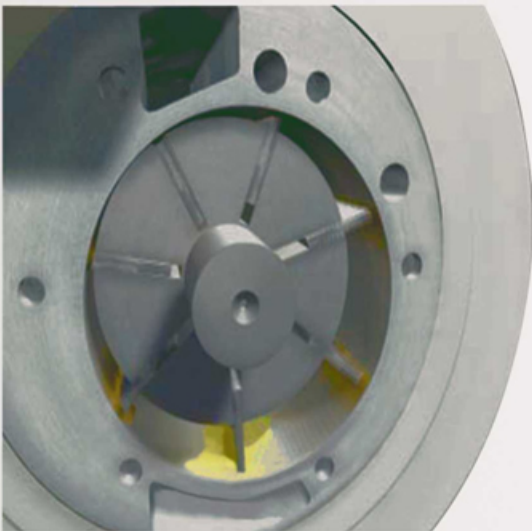
This is represented by a unit running for 16 hours a day and 5 days a week. Air consumption varies from 70 to 100% of maximum air demand.

Profile 3

This profile represents an application with an eight-hour shift at constant consumption for five days a week. Air demand tends to stay around 90% of maximum requirement.



BLADES DESIGNED FOR OVER 100,000 HOURS LIFE*



An oil film on the inside surface of the stator prevents wearing of the moving parts, avoiding a direct contact between the stator itself and the blades.

*(with Mattei Rotoroil)

ROTOROIL 8000 F2

Suitable for Mattei compressors, Rotoroil 8000 F2 oil guarantees high performances, long life and low maintenance costs.

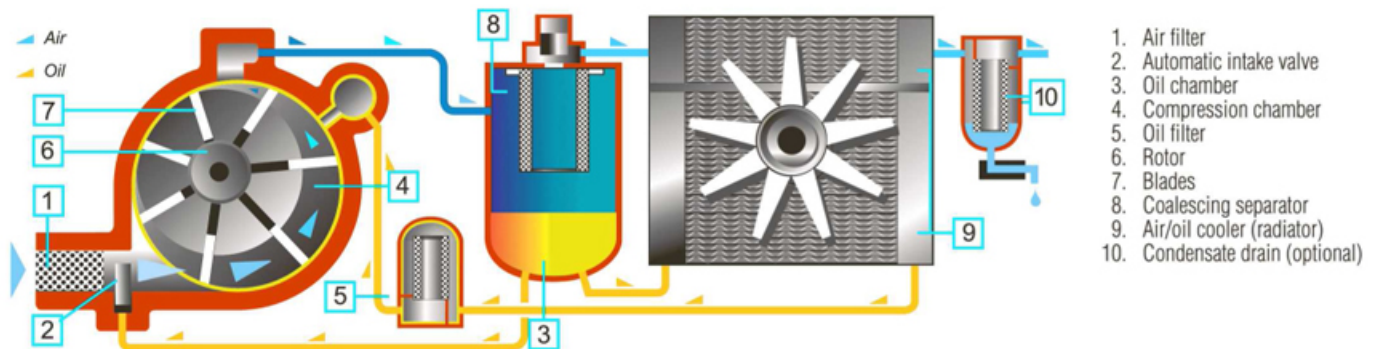


Mattei: the advantages of an exclusive technology

OPERATION PRINCIPLE OF MATTEI COMPRESSORS

The air is drawn through a filter and passes through a modulating proportional valve which regulates air delivery according to air requirement. This valve maintains a constant working pressure. The air goes into the compression chamber where the stator, rotor and blades create a series of vanes (or volumes). The rotor rotates eccentrically to the stator and is characterized by vertical slots in which the blades are placed and are pushed against the stator's wall by centrifugal force. Lubrication and cooling are guaranteed by an efficient injection system which provides a perfect seal and a lower lubricant consumption. A thin film of oil on the stator's wall avoids direct contact of the metal parts giving no wear. Dur-

ing the rotation the compression occurs with the volume reduction of the spaces between the rotor-blades and the stator. The compressed air and oil mixture passes through various separating phases mechanical and coalescent, leaving less than 3 ppm (parts per million) of oil in the air. The purified air leaves the compressor and is cooled in the radiator. The condensate which is produced is eliminated by a separator with an electronic condensate drain.

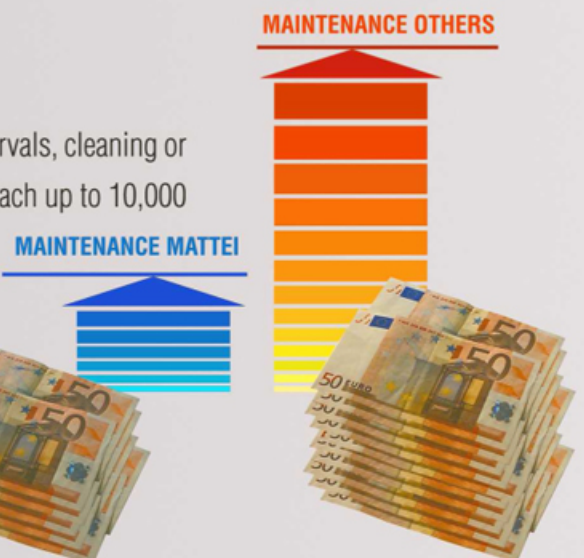


RELIABILITY

These compressors are designed for industrial continuous operation 24 hours a day, 12 months a year. The life of Mattei compressors often exceeds 100,000 working hours.

SIMPLE AND ECONOMIC MAINTENANCE*

Maintenance operations only include changing the oil at predetermined intervals, cleaning or replacing the air filter and cleaning the radiator. The separator filters can reach up to 10,000 working hours, with remarkable savings. The absence of roller bearings



*(with Mattei Rotoroil)

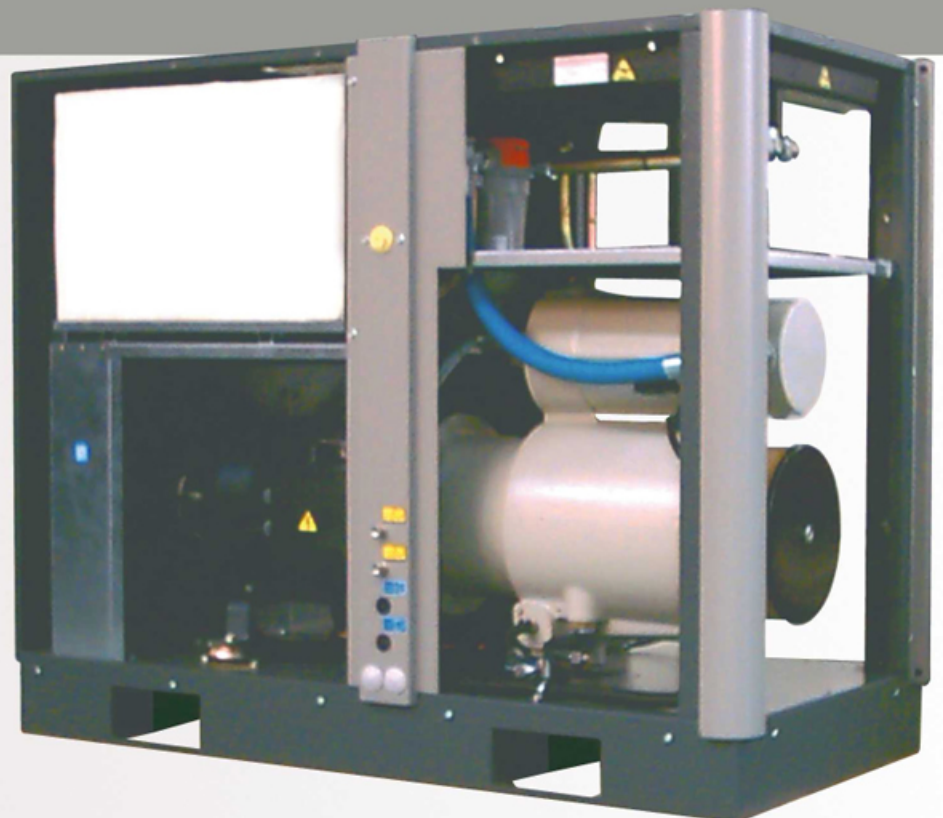
The Optima series

from 11 to 90 kW



- High performances
- Excellent reliability
- Easy operation

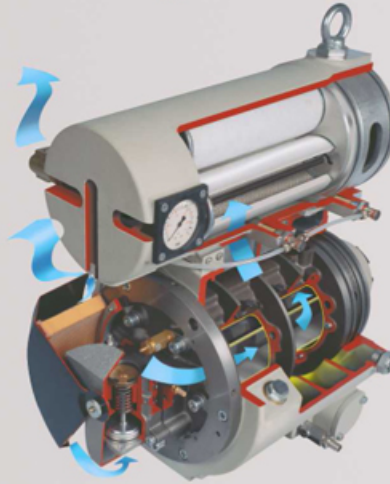
- Energy saving compressor
- Low maintenance costs
- Electronic control



Energy efficiency at its best

Technology

Mattei's exclusive high technology air ends have been designed to obtain excellent performances in industrial applications. Reliability and efficiency are enhanced by the extremely reduced rotational speed, by the absence of roller bearings and by an advanced lubrication and cooling system.



THE BEST SOLUTION TO SAVE ENERGY

To ensure maximum energy saving OPTIMA series compressors can suit their operation to the load profile required by the compressed air system.

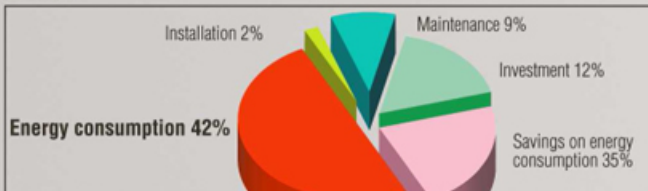
The inverter changes the motor rotational speed, adapting the air delivered by the compressor to the real demand. OPTIMA can save up to 35% of the annual operating costs.



STANDARD



OPTIMA

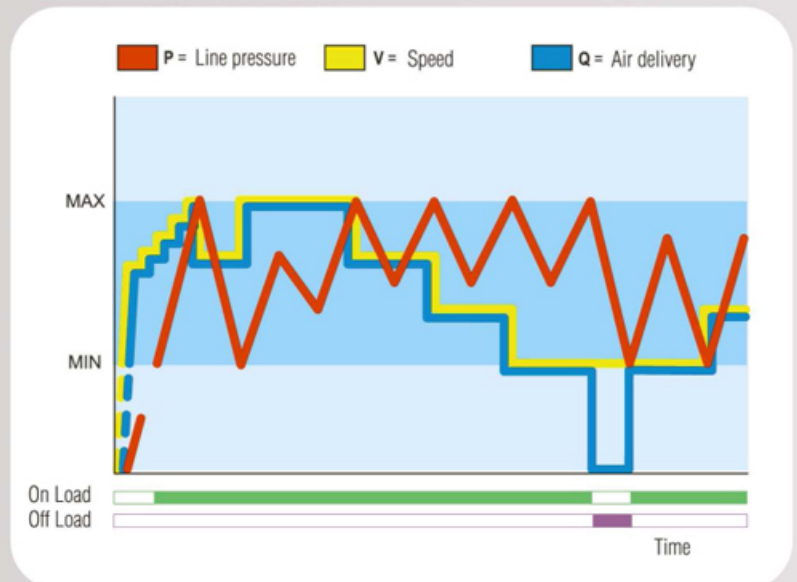


Life Cycle Cost comparison (LCC) over a period of 5 years.

OPERATION PRINCIPLE

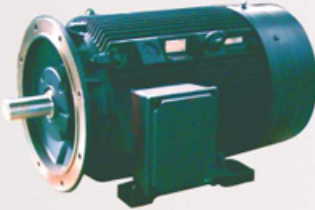
Optima operates within a range of pre-set maximum and minimum pressures. When reaching the maximum pressure, at the minimum rotational speed the shutdown of the intake valve occurs, the compressor is set "off load" and decompressed to 22 psig, to reduce the energy absorption further.

When the line pressure lowers to the minimum pre-set value it is reset to the "on load" condition and starts delivering air instantly, adapting the rotational speed to the air demand.



HIGH EFFICIENCY MOTORS

The range is equipped with energy saving electric motors in premium efficiency.



DIRECT COUPLING

The electric motor and the compressor are coupled directly by means of a flexible coupling. The coupling between motor and compressor guarantee an extremely noiseless operation, vibrationless, with no power absorption.

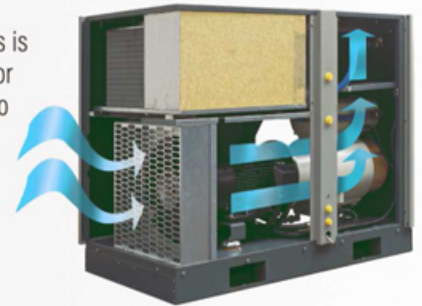
Direct coupling determines a remarkable "energy saving" because there are no energy losses caused by gears or V belts.



AIR FLOW AND COOLING

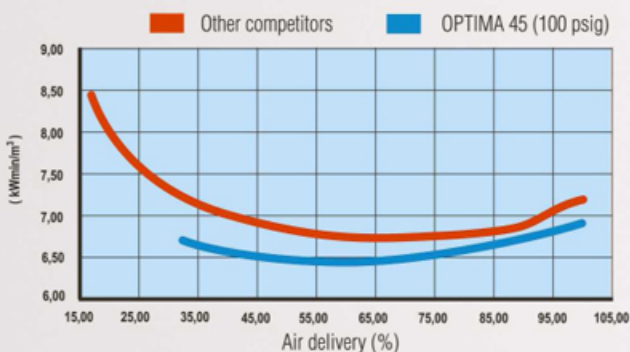
A feature of the OPTIMA series, from 11 to 45 kW, is the absence of an independent electrical cooling fan. Cooling of the compressed air system is obtained through a fan

fitted directly to the main motor shaft. This is the optimal solution for machines belonging to this range. A real advantage in terms of design and energy.



MATTEI INVERTER REGULATION SYSTEM

The Mattei inverter system always assures the highest energy savings. When the compressed air demand is between 100% and 40%, the compressor rotational speed reaches the highest efficiency, with an energy consumption much lower than traditional inverter systems.



MAESTRO



Maestro is a programmable system which controls the compressor and inverter operation and adapts these to the specific requirements of the air distribution system. It has different programming levels and special options for controlling and analyzing the operation

and faults. In fact, Maestro automatically adjusts the compressor's rotational speed to the preset maximum pressure value. If connected to other compressed air packages equipped with Maestro, the unit can become master of a compressed air plant, thus saving on the installation of an additional controller. Maestro has a "LCD" display, an ergonomic control panel with keys for quick access to the main menu and interfaces to communicate with other "MAESTRO" devices or with supervisor PC.

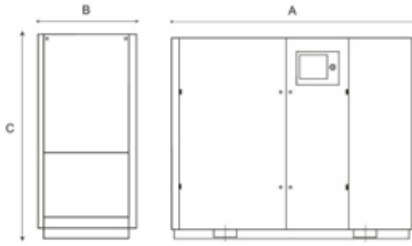
TECHNICAL FEATURES

Model	Working pressure PSIG	F.A.D.*			Rated power kW	Sound pressure level** db(A)
		min	SCFM	max		
OPTIMA 11	100 - 145	42	÷	68	11	65
OPTIMA 15	100 - 145	58	÷	93	15	67
OPTIMA 22	100 - 145	80	÷	130	22	67
OPTIMA 30	100 - 145	88	÷	188	30	74
OPTIMA 45	100 - 145	133	÷	282	45	74
OPTIMA 60	100 - 145	170	÷	382	55	68
OPTIMA 75	100 - 145	220	÷	484	75	68
OPTIMA 90	100 - 145	258	÷	581	90	68

* Free air delivery as per ISO 1217: 1996 annex "C"

** Sound pressure level as per PN8NTC2.3

DIMENSIONS (in.) - WEIGHT (lbs.)



Model		11	15	22	30	45	60	75	90
A	in.	50	60	60	72	72	85	85	85
B	in.	28	32	32	38	48	48	48	48
C	in.	41	48	48	66	75	75	75	75
Weight									
Standard	lbs.	530	1015	1015	1808	2073	3616	3704	3792

Mattei Compressors Inc. reserves the right to change the data contained in this brochure at any moment and without notice.

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