



# RAIL COMPRESSORS

Rotary Vane Technology; On-board



THINK GREEN

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## ROTARY VANE TECHNOLOGY COMPRESSORS IS OUR BUSINESS

Mattei Compressors is the world leader in the design and manufacture of rotary vane technology for the compressed air market, with more than 60 years' experience in the production of vanes, supplying to customers all over the globe.

Building on the success as an alternative to both Piston and Screw compressors, Mattei developed a complete and comprehensive range of rotary vane compressors to support the pneumatic applications in operation on today's rail vehicles, namely; Braking Systems, Door Actuation, Suspension, Wipers & Horns, Auxiliary Panels, Pantographs and Sand Boxes. Mattei compressors offer more than just air! We deliver a century of manufacturing expertise, providing unrivalled flexibility from compressor packages which can be fitted into the smallest available space envelope, thanks to the compactness and lightweight nature of the design.

It doesn't just stop there! The low rotational speed which generally does not exceed 2000rpm, means the compressors are extremely quiet and generate no vibration. This has the added benefit of low operating costs, with the rotary vane compressors being designed to achieve 100,000 operating hours without the need to replace blades or other metal parts/components.



**MATTEI**  
**VALUE**  
**PROPOSITION**



## WHY MATTEI?

At Mattei, our customers can select the most suitable compressor option to integrate into their on-board systems, whether New Build or Refurbishment, the flexibility of the design means components can be mounted as a complete bespoke Air Generation and Treatment Unit (AGTU) or as flexible modules for the more demanding of installations, while guaranteeing air quality suitable for any rolling stock application.



### Exceptional performance is the simplicity of a Mattei Rotary Vane:

- Compact design
- Lightweight
- Energy efficient
- Unrivalled reliability
- Pure & smooth pulse free air
- Low noise level
- Vibration free
- Minimal maintenance
- Powered by any type of drive system
- Operates in the most demanding of environments
- **Innovative**

### When compared to other compressors, the Mattei compressor range offers very low rotational speed, a distinct feature, which means more air, greater reliability, reduced energy consumption and quiet operation.

- Extended life, unlike traditional air ends
- No thrust bearings, just white metal bushes which are not subject to wear
- Energy savings of **over 15%** achieved, when compared to other rotary compressors of the same output flow

#### ROTARY VANE TECHNOLOGY



Extended life, unlike traditional air ends

#### LIGHTWEIGHT



Low operating costs

#### COMPACT DESIGN



Can be fitted into the smallest available space envelope

#### LOW ROTATIONAL SPEED



Quiet, vibration free, reduced energy consumption

#### LIFE CYCLE COST



The lowest cost of ownership of any compressed air technology

#### DIRECT COUPLING

# 1:1

Safer, more durable, more reliable

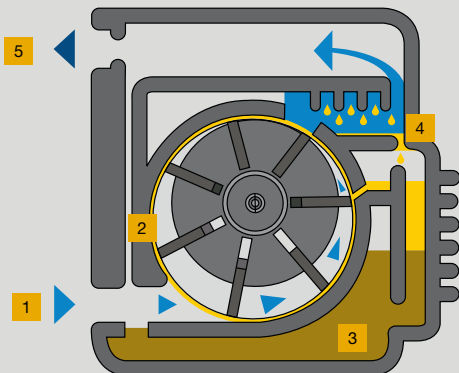
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## ROTARY VANE PRINCIPLE

The Heartbeat of any Mattei Compressor is the air end, this small and compact design is ideally suited for rail applications owing to the smooth rotary vane compression principle. It delivers high quality air, with very low noise levels, coupled with unrivalled reliability in operation in the most demanding and rugged of environments. The flexibility of design allows the compressor to be operated by any kind of drive system which meets the requirements and expectations of the user to control the on-board applications.

### OPERATING PRINCIPLE



1	Air intake
2	Principal components
3	Lubricant blended for air
4	Three-stage oil separation
5	Air delivery

Maximum efficiency of the air compression process, excellent reliability and low maintenance costs are just some of the key benefits the Mattei rotary vane technology can offer.

The vane compressor is a volumetric rotary compressor, that consists of a stator cylinder (housing) in which a rotor is mounted off-centre but parallel to its sides. The rotor has a series of slots machined into its body housing blades (vanes) which are positioned and free to slide up and down during the compression process. The blades are specifically profiled enabling them to ride on a cushion of oil, which provides lubrication and sealing qualities to the stator during rotation.

### PURE & SMOOTH PULSE FREE AIR

Lubrication and cooling are assured, by an efficient injection system, which allows a flow of oil to enter the stator, coating the metal components and preventing any metal to metal contact. The oil is used for:

- Sealing
- Lubricating
- Cooling

The compressed air and oil combination passes through various separating phases, using mechanical and coalescent methods of removal, before exiting the compressor and leaving less than 3mg/m<sup>3</sup> (3ppm) of aerosol in the air. The now clean air leaves the compressor and is cooled in the aftercooler (if fitted), where condensation occurs mechanically and is removed before the air is allowed to pass downstream into the air treatment system. Oil Free air can be achieved and guaranteed, using air treatment packages, matching the air quality to the desired performance required by the user. **(Ask Mattei how we can precisely match your system demands).**



## OPERATING PARAMETERS

Compression Technology

Output

Free Air Delivery (FAD)

Rated Power

Operating Pressure

Ambient Temperature - Standard  
- Optional

Sound Pressure Level

Operation

Mounting

Coupling

Drive (Motor)

Voltage

Frequency

Cooler-Oil

Air Treatment  
(Select options to match your requirements)

Relative Humidity

## PERFORMANCE

Rotary Vane

0 to 100%

160 to 6,000 l/min (6 to 212 cfm)

1.1 to 55 kW (1 to 74 hp)

6 to 13 bar (87 to 189 psi)

-40°C to + 60°C (-40°F to + 140°F)

-55°C to + 80°C (-67°F to + 176°F)

60 - 80 dB(A)

Start/Stop or Continuous run

Variable Speed option also available

Raft Mounted or Modules

Direct Drive

DC, AC, Permanent Magnet, Hydraulic or Belt

24V to 900V

Variable

Integrated, Remote Panel, Water

Water Separator, General Purpose Filter, High Efficiency Filter, Desiccant Air Dryer, Membrane Air Dryer, Dust Filter, Air After Cooler

Up to 98%

**Important Notice:** Turn key design and manufacture available to customer specific requirements

## THE COMPRESSOR FOR ALL APPLICATIONS

Whether you operate a **Light Rail through to High Speed**, Mattei has a compressor system to match your system requirement.

- Light Rail & Trams
- Metro
- Commuter / Rapid Transit
- Automatic people movers
- Regional
- Diesel / Electric Locomotives
- Hybrid Locomotive
- Shunters / Switchers
- High & Very High Speed
- On track plant



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## ALWAYS CARING ABOUT OUR CUSTOMERS

Mattei offers worldwide consultancy from its sales and assistance network. By purchasing a Mattei compressor, you can rely on highly qualified after sales service support, who are able to answer any request you may have in a very short timescale. Providing peace of mind at all times!

This in part is thanks to Mattei being present in more than 40 countries around the world, Europe, America, Africa, Middle East, Asia and Oceania. Technicians and engineers are at your complete disposal for advice on your system, application and operational safety evaluation, ensuring you get the most from your Mattei compressor system all of the time.



AGU - Air Generation Unit



AGTU - Air Generation and Air Treatment Unit

## LIFE CYCLE COST



When choosing a compressed air solution for rail applications, the long-term cost of ownership is a key consideration. Following industry standard Life Cycle Cost (LCC) methodology, which consider factors as: initial investment, scheduled preventive maintenance, sub-component reliability (MTBF), the costs of Genuine Mattei replacement parts, and labour costs, Mattei rotary vane compressor packages are proven to deliver one of the lowest total cost of ownership of any compressed air technology in the market.

## CERTIFIED QUALITY



Quality is an integral part of our company function and constant improvement of all production processes, which guarantees the maximum level of reliability and satisfaction is achieved. This in brief is the value and meaning of Mattei's operational philosophy. A way of approaching the market and customers which makes Mattei an absolute point of reference in the compressed air sector. Since 1994, Mattei has been operating with a quality system certified by the DNV institute under UNI EN ISO 9001 standards.

## MATTEI ORIGINAL SPARE PARTS



Mattei original spare parts and lubricants guarantee the performance of our compressor systems, they allow you to be sure of maintaining, over time, the same levels of performance, reliability and safety for the duration of the systems life, which you expect and demand:

- Parts are always available in stock
- Quality tested and conform to manufacturers specifications
- Parts are designed for Mattei recommended maintenance intervals
- Maintenance plans are designed and aligned to optimise your system demands both now and in the future

## HOW MATTEI COMPARES vs. SCREW TECHNOLOGY

SUMMARY OF CHARACTERISTICS	ROTARY VANE	SCREWS
Integrated design	YES	NO
Blow-Hole	NO	YES
Clearance distribution	NO	YES
Roller bearings	NO	YES
Thrust bearings	NO	YES
Bushes	YES	NO
Overhaul	NO	YES
Performance degradation	NO	YES
Compressor ruggedness	GOOD	POOR

For more information see "*Mattei Rotary Vane vs Screw Compressors The inside story*".

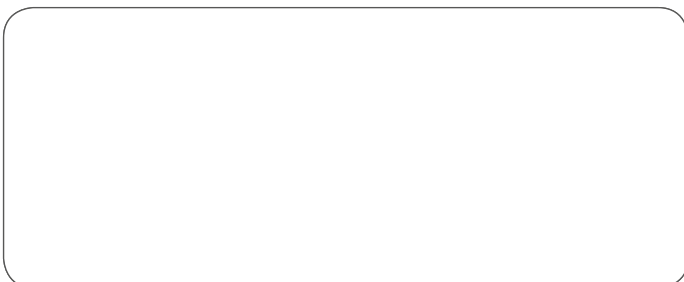


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UNI EN ISO 9001:2015



REV.2

