mattei®
COMPRESSED AIR SINCE 1919

RVR
Series

RAIL COMPRESSORS

THINK GREEN

THINK GREEN

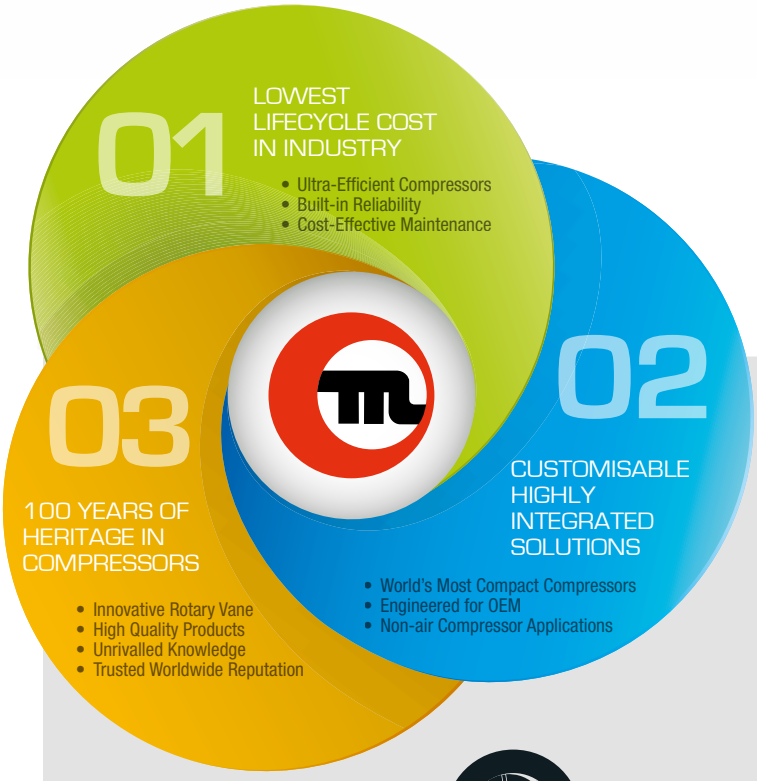
RVR AIR COMPRESSORS

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 world.

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 Sandboxes.** 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 2000 rpm, 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 vanes or other metal parts/components.



MATTEI VALUE PROPOSITION

THE ORIGINAL ROTARY VANE

RVR AIR COMPRESSORS

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 RVR series design, means the compressor can be mounted independently or installed as part of a complete bespoke Air Generation & Treatment Unit, (AGTU) guaranteeing the air quality is suitable for any rolling stock application as the air supplied will meet the *BS ISO 4975:2022 Air Quality standards.

**BS ISO 4975:2022 Railway applications - Braking system - Quality of compressed air for pneumatic apparatus and systems.*

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

THE ORIGINAL ROTARY VANE

Extended life, unlike traditional air ends

LIGHTWEIGHT

KG

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

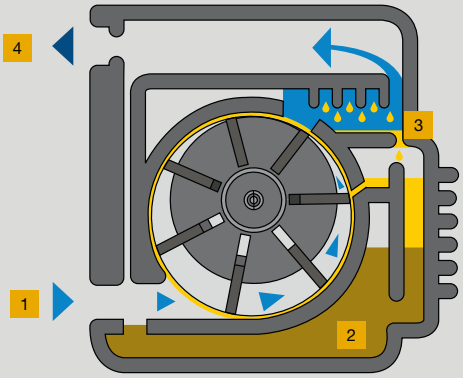
1:1

Safer, more durable, more reliable

ROTARY VANE PRINCIPLE

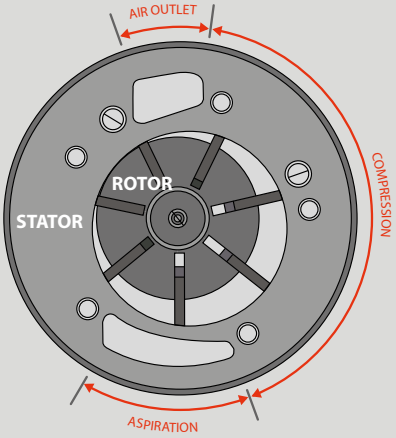
The Heartbeat of any Mattei Compressor is the air end, this small and compact design is ideally suited for rail applications owing to the smooth rotary vane compression principle. It delivers high quality air, with very low noise levels, coupled with unrivalled reliability in operation in the most demanding 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	Lubricant
3	Three-stage oil separation
4	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 vanes which are positioned and free to slide up and down during the compression process.



The vanes 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/m3 (3ppm) of aerosol in the air. The virtually Oil Free 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. The oil performs an important function: it regulates, driving the control and regulation systems (e.g. the servo-valve). Total Oil Free air can be guaranteed, using an air treatment package, matched to the air quality class demanded by the application and the operator/user, which is designed to meet the requirements of *BS ISO 4975:2022. (Ask Mattei how we can precisely match your system demands).

RVR AIR COMPRESSORS

OPERATING PARAMETERS	PERFORMANCE
Compression Technology	Rotary Vane
Compressed air regulation	0 to 100%
Free Air Delivery (FAD)	0,100 to 9,690 m³/min (3,53 to 342,15 cfm)
Operating Pressure	6 to 13 bar (87 to 189 psi)
Ambient Temperature - Standard - Optional	-15°C to +45°C (+5°F to +113°F) -40°C to +60°C (-40°F to +140°F)
Sound Pressure Level	64 - 84 dB(A)*
Operation	Start/Stop - Continuous Variable Speed
Oil cooler	Air / Water - Integrated / Remote
Compressed air cooler	Air / Water - Remote
Coupling	Direct
Motor type	Asynchronous - Permanent magnet Direct current - Hydraulic

*Sound pressure level at 1500 rpm

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

THE COMPRESSOR FOR ALL APPLICATIONS

Whether you operate a **Streetcar to a heavy Class 1 type Locomotive**, (with anything in between) Mattei has a compressor solution to match your system requirements.

- Streetcar
- Light Rail & Trams
- Metro
- Commuter / Rapid Transit people carrier
- Automatic people movers
- Regional
- Diesel / Electric Locomotives
- Hybrid Locomotives
- Class 1 Locomotives
- Shunter / Switcher
- High & Very High Speed
- On track infrastructure plant

RVR AIR COMPRESSORS

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RVR SERIES MAIN TECHNICAL DATA

REFERENCE CONDITIONS

Inlet Pressure	1 bar (a)	14,5 psi (a)
Air Intake Temperature	20°C	68°F
Effective Working Pressure	10 bar	145 psi

Type RVR01 Air End

OPERATING RANGE

Free Air Delivery (FAD) 0,10 - 0,48 m³/min / 1,67 - 8,00 l/sec / 3,53 - 16,95 cfm
Working Pressure 8 - 13 bar g / 116 - 189 psi g
Ambient Temperature -15 - +45°C / 5 - 113°F*

*up to -40°C (-40°F) with Winter Pack / +60°C (140°F) with enhanced cooling system (not include)

Air End & Displacement	Cycles	Capacity (@1500 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1500 RPM) db(A)	Cycles	Capacity (@1800 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1800 RPM) db(A)
RVR01-1	50 Hz	0,12	2,02	4,27	64	60 Hz	0,14	2,38	5,04	66
RVR01-2		0,16	2,69	5,70			0,19	3,17	6,72	
RVR01-3		0,22	3,62	7,66			0,26	4,26	9,03	
	Shaft Power: 1,2 - 2,1 kW					Shaft Power: 1,4 - 2,6 kW				

* Sound pressure level in accordance with ISO2151. tolerance +/- 3db(A)

Type RVR02 Air End

OPERATING RANGE

Free Air Delivery (FAD) 0,30 - 1,58 m³/min / 5,00 - 26,33 l/sec / 10,59 - 55,79 cfm
Working Pressure 6 - 13 bar g / 87 - 189 psi g
Ambient Temperature -15 - +45°C / 5 - 113°F*

*up to -40°C (-40°F) with Winter Pack / +60°C (140°F) with enhanced cooling system (not include)

Air End & Displacement	Cycles	Capacity (@1500 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1500 RPM) db(A)	Cycles	Capacity (@1800 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1800 RPM) db(A)
RVR02-1	50 Hz	0,40	6,68	14,16	70	60 Hz	0,44	7,33	15,54	74
RVR02-2		0,53	8,82	18,69			0,62	10,33	21,89	
RVR02-3		0,63	10,53	22,30			0,74	12,33	26,13	
RVR02-4		0,71	11,91	25,24			0,84	14,00	29,66	
RVR02-5		0,75	12,53	26,54			0,88	14,67	31,07	
RVR02-6		0,87	14,45	30,61			1,02	17,00	36,02	
	Shaft Power: 3,4 - 6,4 kW					Shaft Power: 4,2 - 7,9 kW				

* Sound pressure level in accordance with ISO2151, tolerance +/- 3db(A)

RVR AIR COMPRESSORS

Type RVR03 Air End

OPERATING RANGE

Free Air Delivery (FAD) 0,79 - 3,30 m³/min / 13,23 - 55,00 l/sec / 28 - 116,52 cfm
Working Pressure 6 - 13 bar g / 87 - 189 psi g
Ambient Temperature -15 - +45°C / 5 - 113°F*

*up to -40°C (-40°F) with Winter Pack / +60°C (140°F) with enhanced cooling system (not include)

Air End & Displacement	Cycles	Capacity (@1500 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1500 RPM) db(A)	Cycles	Capacity (@1800 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1800 RPM) db(A)
RVR03-1	50 Hz	1,03	17,17	36,38	76	60 Hz	1,21	20,24	42,87	80
RVR03-2		1,17	19,47	41,26			1,38	22,95	48,62	
RVR03-3		1,37	22,91	48,54			1,62	27,00	57,20	
RVR03-4		1,65	27,43	58,10			1,94	32,32	68,48	
RVR03-5		1,68	28,07	59,47			1,99	33,09	70,09	
RVR03-6		1,87	31,24	66,18			2,21	36,82	77,99	
	Shaft Power: 8,0 - 14,3 kW					Shaft Power: 9,9 - 17,6 kW				

* Sound pressure level in accordance with ISO2151, tolerance +/- 3db(A)

Type RVR04 Air End

OPERATING RANGE

Free Air Delivery (FAD) 1,56 - 5,22 m³/min / 26,00 - 87,00 l/sec / 55,08 - 184,32 cfm
Working Pressure 6 - 13 bar g / 87 - 189 psi g
Ambient Temperature -15 - +45°C / 5 - 113°F*

*up to -40°C (-40°F) with Winter Pack / +60°C (140°F) with enhanced cooling system (not include)

Air End & Displacement	Cycles	Capacity (@1500 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1500 RPM) db(A)	Cycles	Capacity (@1800 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1800 RPM) db(A)
RVR04-1	50 Hz	2,28	37,95	80,41	80	60 Hz	2,68	44,73	94,76	85
RVR04-2		2,35	39,12	82,88			2,77	46,11	97,68	
RVR04-3		2,47	41,09	87,05			2,91	48,43	102,60	
RVR04-4		2,60	43,38	91,91			3,07	51,13	108,32	
RVR04-5		3,01	50,22	106,39			3,55	59,19	125,39	
RVR04-6		3,23	53,88	114,16			3,81	63,51	134,54	
RVR04-7		3,59	59,77	126,64			4,23	70,45	149,25	
	Shaft Power: 15,9 - 27,1 kW					Shaft Power: 19,6 - 33,4 kW				

* Sound pressure level in accordance with ISO2151, tolerance +/- 3db(A)

Type RVR05 Air End

OPERATING RANGE

Free Air Delivery (FAD) 2,50 - 9,69 m³/min / 41,67 - 161,50 l/sec / 88,28 - 342,15 cfm
Working Pressure 6 - 13 bar g / 87 - 189 psi g
Ambient Temperature -15 - +60°C / 5 - 113°F*

*up to -40°C (-40°F) with Winter Pack / +60°C (140°F) with enhanced cooling system (not include)

Air End & Displacement	Cycles	Capacity (@1500 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1500 RPM) db(A)	Cycles	Capacity (@1800 RPM) m³/min	l/sec	cfm	*Sound Pressure Level (@1800 RPM) db(A)
RVR05-1	50 Hz	3,77	62,84	133,13	84	60 Hz	4,44	74,06	156,90	86
RVR05-2		4,50	75,08	159,07			5,31	88,49	187,47	
RVR05-3		5,07	84,51	179,04			5,98	99,60	211,01	
RVR05-4		5,55	92,51	195,98			6,54	109,03	230,98	
RVR05-5		6,37	106,15	224,87			7,51	125,10	265,03	
RVR05-6		6,47	107,89	228,57			7,63	127,16	269,39	
RVR05-7		7,35	122,44	259,39			8,66	144,30	305,71	
RVR05-8		8,03	133,77	283,40			9,46	157,66	334,00	
	Shaft Power: 28,5 - 57,6 kW					Shaft Power: 35,2 - 71,1 kW				

* Sound pressure level in accordance with ISO2151, tolerance +/- 3db(A)

RVR AIR COMPRESSORS

AIR TREATMENT

Where applications require specific air quality, to guarantee operation of the components which depend upon Clean Dry Air for their reliable operation, **Mattei can provide air treatment packages to remove any residual contamination in compliance with BS ISO 4975:2022 Air Quality classes**. This means the removal of any contamination which would otherwise pass through the compressor and continue on downstream into the vehicle's applications.

The packages available are modular and can be fitted as free-standing components located anywhere on-board a vehicle, or supplied as a complete Air Generation & Treatment Unit (AGTU) fitted into a cassette/raft which can be floated both in to and out of a pre-determined space envelope, with the minimum of disruption to the operator/user.

PRE-FILTRATION is equipped with:

- **Water Separator** for removal of bulk liquids and particulate
- **Coalescing Filters** to remove particulate and oil aerosol, effectively providing oil free air to 99.9999%
- **Electronic Drains** to discharge the contamination collected and positively remove from the compressed air system without air loss.

RVR AIR COMPRESSORS

ELECTRICAL BOX

To electronically manage the Pre-filtration solenoids and the reliable operation of the desiccant air dryer.

POST FILTRATION

For the removal of potential particulate which could migrate from the desiccant dryer as part of the drying process. Removal of any particulate is via a manual drain.

HEATLESS DESICCANT AIR DRYER

- Removal of residual Water Vapour, providing an outlet Dewpoint suppression.
- The unit is modular and is sized to meet the air quality class desired by the operator/user.
- Can be mounted in the Vertical / Horizontal or Stacked orientation for simplicity of installation.

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RVR AIR COMPRESSORS

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.

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.

CUSTOM APPLICATIONS

Customized products are available to meet different installation conditions and specific requirements in terms of frame, control system or power supply.

AGU - Air Generation Unit

AGTU - Air Generation and Air Treatment Unit

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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