

Industrial Automation

IMI Norgren

Locomotive Air Filtration

Breakthrough
engineering for
a better world



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Breakthrough engineering for a better world

We create solutions for our customers which enable smarter, safer, more productive and sustainable factories, production lines and warehouse operations. Our pneumatic and electric motion systems help machine builders and end users around the world automate and optimise manufacturing and warehousing processes.

We have partnered with customers in industrial automation for over a century, applying our experience and innovation to create lasting value for their businesses. Our solutions support critical industries such as automotive, food and beverage, pharmaceuticals and even the space industry. We support the automation of precision manufacturing, product assembly, testing and packaging.

We use the latest digital technologies in our automation products and constantly innovate in close partnership with our customers. By applying our deep expertise, we can solve their toughest automation challenges, today and tomorrow. Through increased productivity, efficiency and safety, our customers can serve their own customers better, creating sustainable competitive advantage and delivering growth.

Our world-class product portfolio includes IMI Norgren, IMI Bimba, IMI Bahr and IMI Buschjost.

Breakthrough engineering you can count on.

NOTE: Due to our policy of continuous development, we reserve the right to change specifications without prior notice.

Delivering Expertise, Solutions and Value to the Rail Sector

For over 45 years, we have delivered robust, reliable and bespoke solutions to the rail sector.

Our products continue to give millions of miles of reliable service across the world's most challenging environments, from the cold of Northern China and Eastern Europe to Australian outback heat.

With a true understanding of the daily issues faced by rail operators and original equipment manufacturers, we design for the precise needs of the rail industry, at:

- Temperatures ranging from -40°C (-40°F) to +80°C (+176°F)
- Voltage tolerances of +/- 30%
- EN 61373 category 1 class A and B vibration resistance
- EN45545-2 Fire and Smoke

We talk extensively to maintenance professionals and work closely with rail engineers to ask the questions they ask. That means we can offer customised, practical solutions to the metro, intercity, high-speed, freight and permanent-way rail industries, covering:

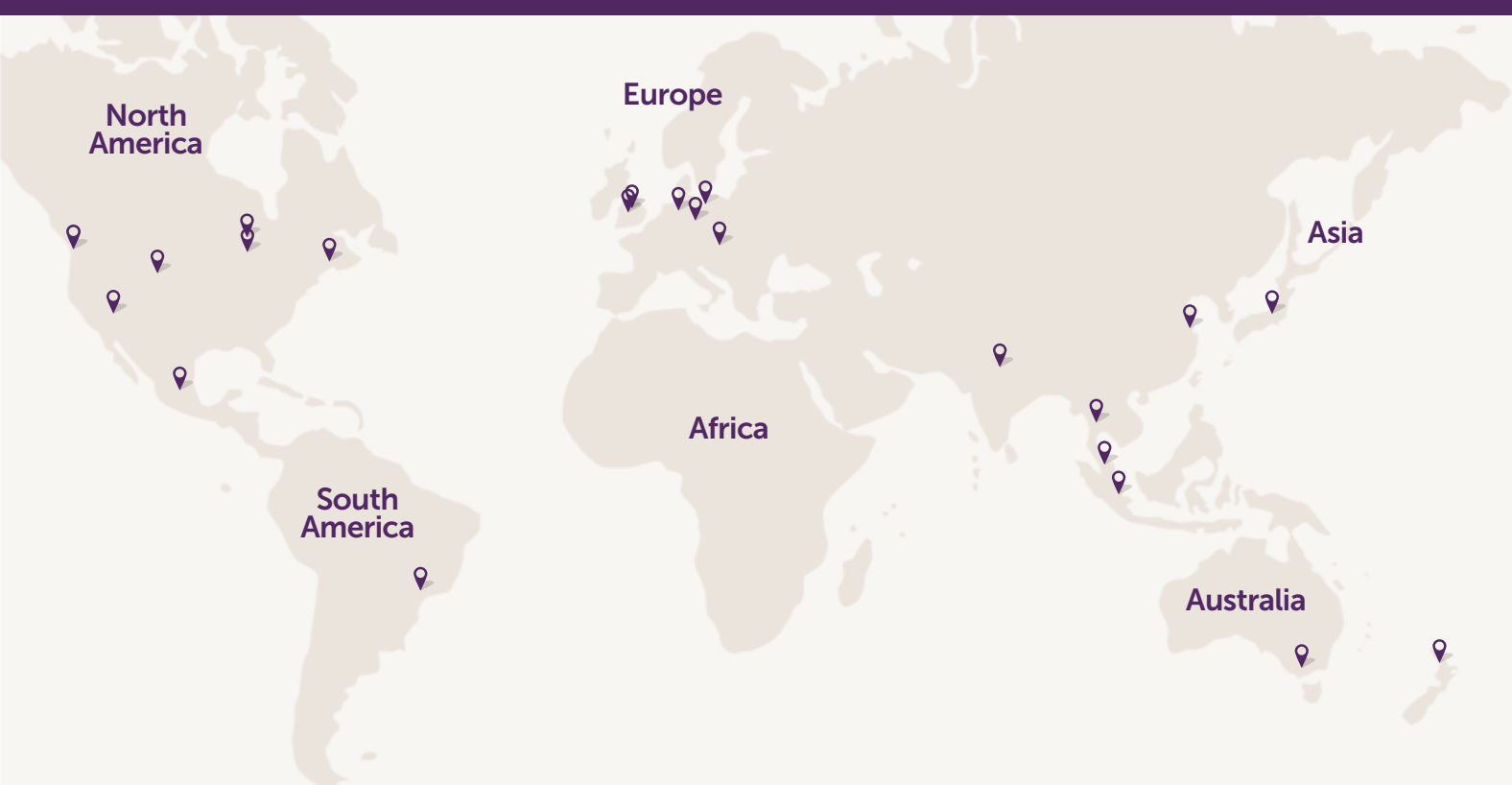
- Air preparation equipment
- Brake sub-systems and components
- Coupling control systems
- Door and step control systems
- Pantograph control systems
- Water control systems
- Freight control and actuation
- Suspension control equipment

By listening and responding to your specific challenges, we help you make significant improvements and savings in terms of cost of ownership, energy efficiency, reduced maintenance and more.

Global Support

We help you achieve your goals by working with you as a partner, not just a supplier. Our dedicated rail team is connected worldwide to ensure close, continuous support no matter what the size and extent of your organisation. We have the reach and capability to work alongside you on complex, global projects or to simply offer local spare part supply.

●● Across manufacturing, sales, innovation centres and offices ●●



Global Testing and Validation

We work closely with our customers to achieve tailored solutions. During development and testing, the focus is placed on designing products that can withstand anticipated loads and consistently perform their tasks. It is this thorough and detailed testing and validation in accordance with the relevant standards that reduces early failure of components. In addition, a comprehensive valuation under realistic conditions helps avoid high consequential costs caused by failures of components in the end application.

Complete product testing and valuation is done in our state-of-the-art testing centres.

The laboratories have an extensive range of test equipment, operated by a neutral expert team working independently of the development departments. Their experience and expertise enables quick implementation of tests, the design of test programs tailored to the needs of real applications and operating conditions in the various sectors, and a guarantee of the neutrality and accuracy of test results.

We have extensive experience in the field of environmental simulation, with a focus on climate, temperature, thermal shock, corrosion, vibration and mechanical shock.

Prototyping and material laboratories are additional, important resources that contribute to our targeted and rapid product development.

- Flow measurement ranges: 0.05 l/h to 4000 m³/h
- Test pressures: Up to 1000 bar
- Volumetric flows: Up to >900 m³/h
- Temperatures: -80°C to +220°C
- Frequency: Up to 3000 Hz
- Max. Acceleration: Up to 100 g
- CFD capability (Computational Fluid Dynamics)
- Specific tests we undertake for the rail sector include:

- EN45545-2
- EN 50155
- EN 50121-3-2
- DIN 5510-2
- EN 61373
- NFPA 130
- EN 60068
- EN ISO 9223
- EN 5011
- EN 779





Locomotive Filtration

Advanced Air Filtration Solutions for Locomotives

Locomotive air intakes play a vital role in cooling engines and machine room equipment. However, harmful dirt particles and water droplets from the outside air can shorten equipment lifespan, leading to costly repairs and unexpected downtime.

We've developed an innovative 3-stage filtration system designed to address your most demanding challenges with an outstanding efficiency of over 99.95%.

1. Stage 1 – Louver

This initial stage effectively resists water entry while capturing larger particles, laying the groundwork for reliable air filtration.

2. Stage 2 – Cyclonic Filtering System

Using centrifugal force, this stage efficiently removes dust and particles. Specially engineered tubes with blades generate rotational airflow, driving impurities towards the outer walls for separation. It achieves an impressive 92% efficiency at its rated design speed.

3. Stage 3 – Woven Media Filter

The final filtration stage ensures only clean, dry air is delivered, perfect for optimising performance.

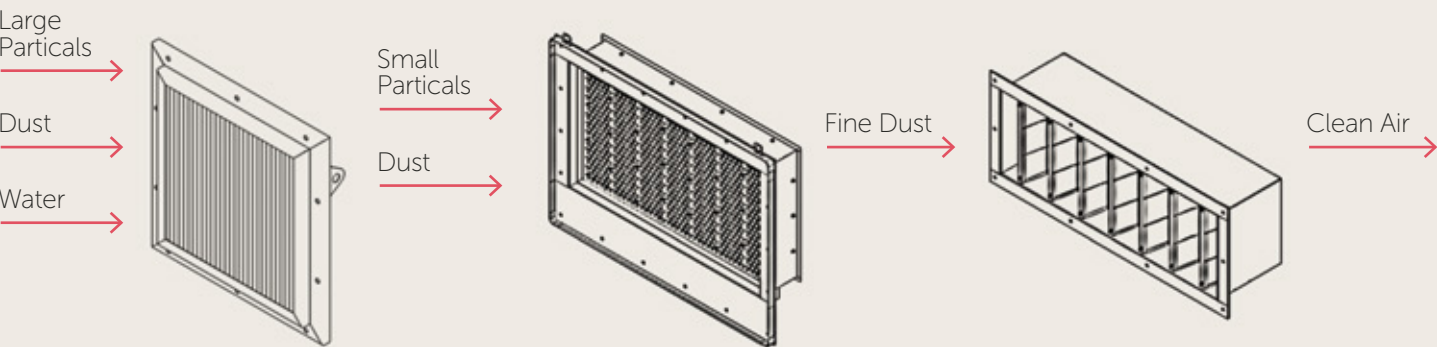
This comprehensive system ensures the delivery of clean, dry air to traction motors and machine room areas, helping reduce carbon emissions, extend locomotive system life, and minimise maintenance needs.

Filtration Systems Built Around Your Needs

Our expert team specialises in creating bespoke filtration systems tailored to meet your specific requirements. Every product we deliver is designed with your safety in mind, adhering to strict standards such as EN45545 for fire safety and EN15085 for welding strength.

With our advanced air filtration systems, you'll experience enhanced performance, a reduced environmental impact, and dependable operation.

System Architecture



Technical Specification

Foreign Particles
(large/medium – water, air & dust)

Louvers

Louver

- Maximum Pressure drop 120 Pa at 4.9 m/sec
- Water Efficiency 99.5%

Foreign Particles
(large/medium – water, air & dust)

Cyclonic Filter
90% Efficiency

Cyclonic filter

- Pressure Drop:
 - Treated air: 600Pascal at 2.6 m/sec
 - Dirty air: 600Pascal @ 0.26 m/sec
- Efficiency:
 - 90% at 2.6 m/sec
 - 85% at 0.26 m/sec

Foreign Particles (small – air & dust)
filtrated and releases clean air

Media Filter G4 Grade

Media filter

- Efficiency as per filter material grade such as G3 / G4 media etc.

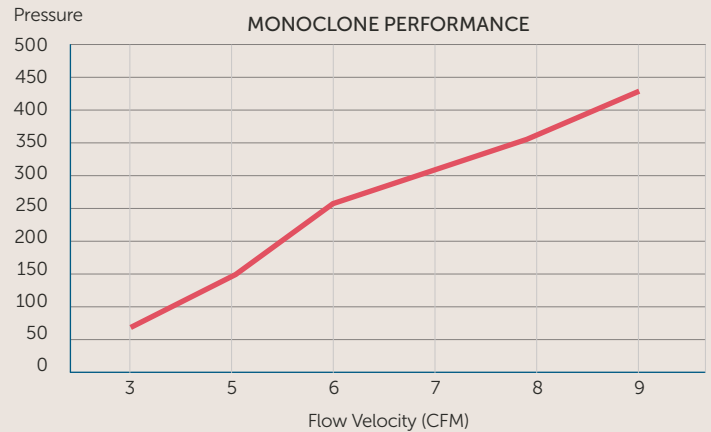
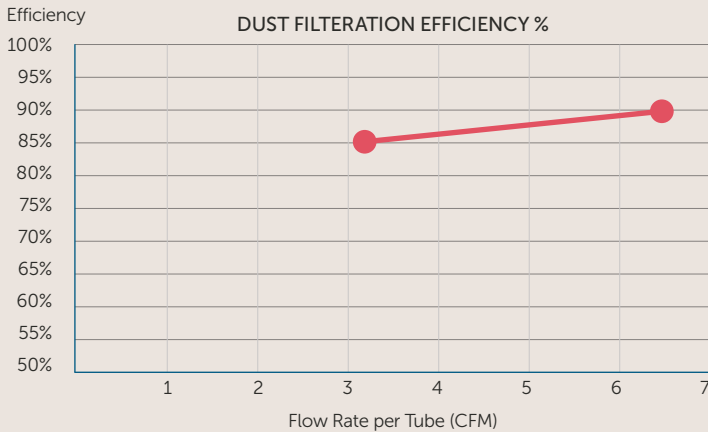
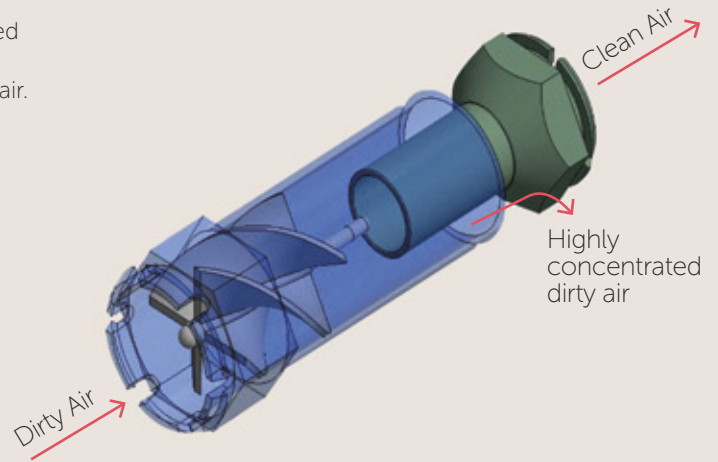
Cyclonic Filter Technology

Innovative Filtration for Cleaner Air

Our Cyclonic Filter Technology redefines air filtration with its advanced design centred on cyclonic motion. By harnessing centrifugal force, we've created an efficient solution for separating impurities from the air.

- **How It Works:** When air enters the system, it is rotated to create a high-speed cyclonic motion. This process drives heavier particles like dust, ash, and soot towards the outer edges of the chamber using powerful centrifugal forces.
- **Clean Air Output:** The purified air accumulates at the center of the rotation and is collected for further use.
- **Efficient Particle Removal:** Impurities are directed to the outer chamber and removed through a dedicated outlet via suction.

This innovative design ensures outstanding filtration performance, delivering cleaner air that boosts operational efficiency.



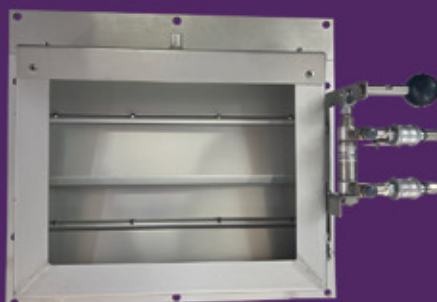
Your Complete System Solution Supplier

We pride ourselves on being your trusted partner for comprehensive rail system solutions, tailored to meet your specific requirements. Our customised fabrications are expertly designed to fit perfectly within the space constraints of locomotive machine rooms, ensuring seamless integration.

With our expertise, you can count on us for solutions that deliver optimal performance and reliability for your application. Together, we'll build systems that work smarter and deliver outstanding results.



●● Cyclonic Filtration ●●



●● Louver ●●



●● Media Filter ●●

Our Industrial Automation sector operates four global centres of technical excellence and a sales and service network in 50 countries, as well as manufacturing capability in Europe, Americas and Asia Pacific.

Supported by distributors worldwide.

For further information, scan this QR code or visit

www.imiplc.com/industrial-automation



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