

# COIPA Italia S.p.A











### A Century of Experience That Makes a Difference

### **Masters of Railways**

**Industrial Partners • Joint Presentation** 











# Rome-Naples High-Speed Rail Line Construction

#### A Major Infrastructure Project for the Italian Railway Network

The construction of the **Rome-Naples high-speed** rail line is a significant infrastructure initiative aimed at enhancing connectivity between two of Italy's major cities. Carried out on behalf of the **Italian Railway Network**, this project seeks to reduce travel times, increase railway efficiency, and **promote economic and tourism development** along the route.











#### Leading Business in **Southern Italy**

#### The Development of Railway Infrastructure in Southern Italy

Driving **Economic Growth** and Regional Connectivity through the **Development of Railway** Infrastructure in **Southern Italy**.

Industrialization in Southern Italy:
The Impact of 1950s Government Initiatives on Calabria's Development and Migration

Starting in the late 1950s, the Italian government launched an industrialization process in Southern Italy, focusing particularly on Calabria. Initially, organizations such as Opera Sila and Cassa per il Mezzogiorno were established, along with Reclamation Consortia, to encourage industrial settlements in the South. However, these initiatives had controversial effects, leading to rural depopulation and a massive workforce migration to the new industrial sites.

**Revitalizing Southern Calabria's Railways:** Government Action Amid Infrastructure Challenges











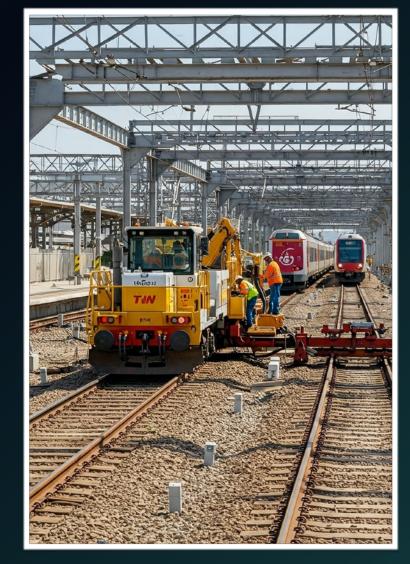
In the 1960s, double-track expansion was completed along the Tyrrhenian corridor, along with infrastructure consolidation, including numerous tunnels between Villa San Giovanni and Gioia Tauro.

The 1970s marked a new phase of development, featuring the Praia a Mare-Scalea railway bypass, entirely double-tracked, and the Santa Eufemia di Lamezia Terme-Rosarno high-speed rail section. This last project included the construction of a strategic railway junction in Eccellente station, enabling the separation of regional and long-distance traffic.

At the same time, the **lonian railway corridor** underwent **significant upgrades**, including the **modernization of railway tracks** and the introduction of **new signaling and electric block systems** in the stations. These improvements **enhanced both efficiency and safety** in rail transport across the region.

Ventura Group stands out as a solid and innovative industrial entity, serving as a reference point not only for Tirreno Cosentino and Calabria but for the entire Southern Italy. The company embodies an industrial vision focused on producing high-quality goods and services, significantly impacting the national and European railway sector.

Specialized in railway construction, the Group develops metro systems and tramways, consolidating its leadership in a strategic sector. The company's success stems from the vision and determination of its founder, Group Ventura, who transformed an entrepreneurial initiative into one of the most important industrial realities in Italy, as recognized by Il Sole 24 Ore.









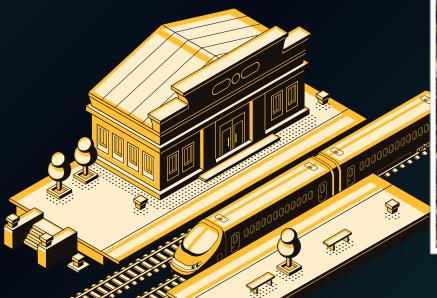


# All the *railway infrastructure* of southern Italy, with narrow gauge lines and maintenanceInnovation and *International Success*.

#### Southern Italy's Railway Infrastructure: A Vital Network

Southern Italy boasts a rich and diverse railway infrastructure, with a mix of standard and narrow-gauge lines that serve both urban centers and remote areas.

These networks play a crucial role in regional mobility, connecting communities and supporting local economies. Despite geographical challenges, continuous maintenance and upgrades ensure efficiency and safety for passengers and freight.









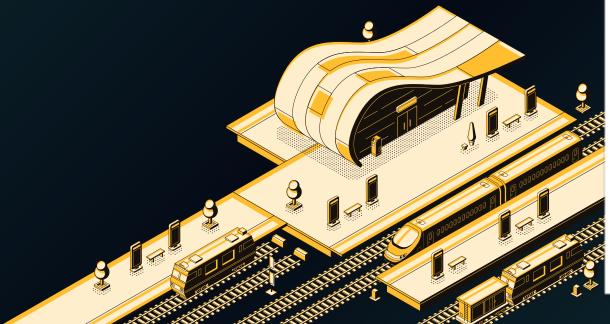


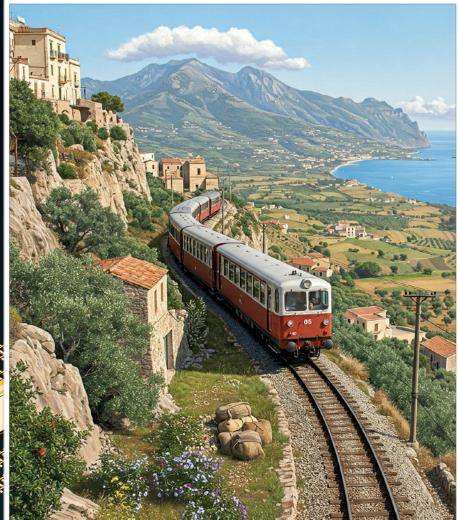


#### The Role of Narrow-Gauge Railways in Southern Italy

Narrow-gauge railways have long been a vital part of southern Italy's transportation system, providing access to areas where standard railways would be impractical.

These lines navigate mountainous landscapes and coastal regions, offering both commuter services and scenic routes. Investment in **modernizing rolling stock** and infrastructure is essential to preserving their role in sustainable mobility.













#### Towards the Future: **Quality and Modernization**

#### **Ventura Group: Innovation and Leadership in the Railway Sector**

Ventura Group's mission is clear: to constantly improve its products, invest in modernization, and enhance the expertise of its workforce. With a future-oriented vision, the company continues to grow and innovate, strengthening its role as a leader in the railway sector, both in Italy and worldwide.



High-profile railway projects in the Iranian desert, attracting international media attention, including The New York Times



Railway project in **Ghana** 









#### **Shaping the Future** with Cutting-Edge Innovation Expanding Our Impact *Across International Markets*



Railway project in **Greece** 



Railway project in Turkey









#### **Shaping the Future** with Cutting-Edge Innovation Expanding Our Impact *Across International Markets*







Railway project in Serbia

Railway project in **Tunisia** 

Railway project in Romania









#### **Metro Development:**

Connecting Cities with Light Surface and *Underground Solutions* 



Warsaw Metro - Line 2 expansion, including Stations C13, C14, and C15



Sassari Tramway – Development of the urban tram system



Palermo Tramway – Expansion and infrastructure improvements



Naples Subway – Construction of new lines and infrastructure



Catania Subway – Ongoing construction and network development



Tram Networks of Palermo and Messina, and the Naples Underground Metro









#### **Shaping the Future** with Cutting-Edge Innovation Expanding Our Impact *Across International Markets*



Messina Tramway – New tramway construction project



Rome Subway – Maintenance and modernization works



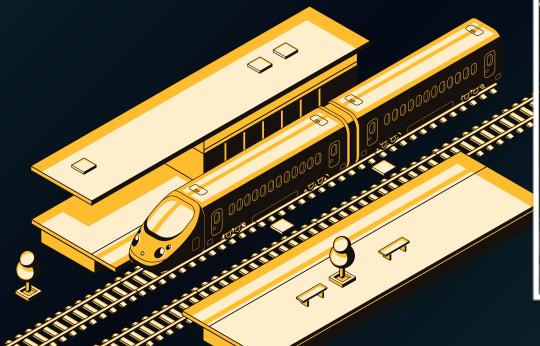






#### **Innovation and International Success in Railway Maintenance**

Southern Italy is making strides in railway innovation, particularly in the maintenance of its extensive network. Advanced monitoring systems, automation, and predictive maintenance strategies are improving efficiency and reducing costs. These innovations not only enhance local transport but also position Italian expertise as a global reference in railway engineering and maintenance solutions.



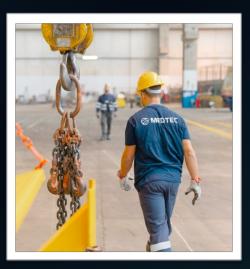






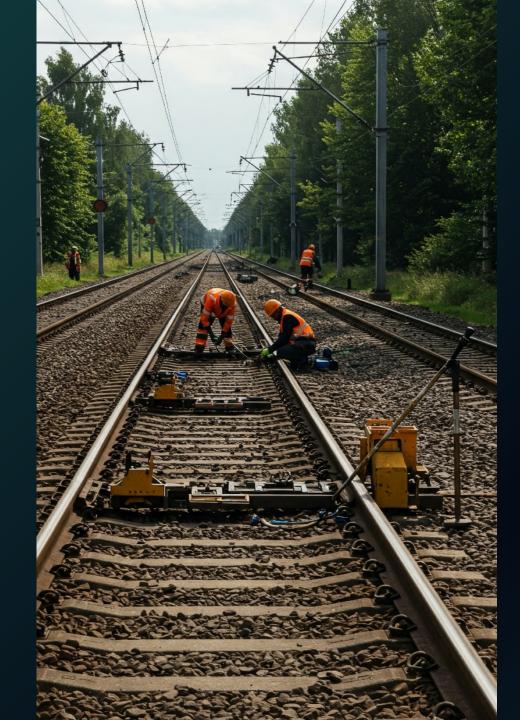
## **Company Overview**

- Who We Are: Medtec S.r.l. is an Italian company specializing in railway vehicle maintenance, repair, and construction. Established from the extensive experience of the Group Francesco Ventura Leader in comprehensive solutions for railway systems.
- Our Mission: Deliver high-quality railway solutions ensuring reliability and efficiency.
- Our Vision: Is to Become a reference point in railway technology, safety, and innovation worldwide.
- Core Values:
  - Safety and Compliance
  - Innovation and Engineering Excellence
  - Customer-Centric Approach
  - Sustainability











### **Location and Facilities**

• **Strategic Location: Based in Gioia Tauro**, an important logistic hub with port and rail connections.

#### Infrastructure:

- 10,000 sqm of covered facilities with an internal railway track.
- 7,000 sqm of open operational space.
- Workshops equipped with advanced machinery for maintenance and repairs.
- Dedicated areas for component testing and refurbishment.









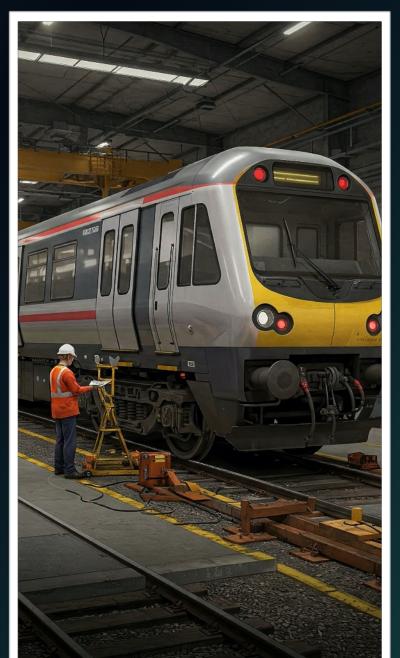
## Specialization

- Rolling Stock Maintenance: Ensuring long service life and performance optimization.
- **Complex Equipment Construction**: Developing cuttingedge railway tools and machines.
- Infrastructure Renewal & Repair: Contributing to Italy's railway modernization.
- Customization Services: Adapting rolling stock to specific operational needs.

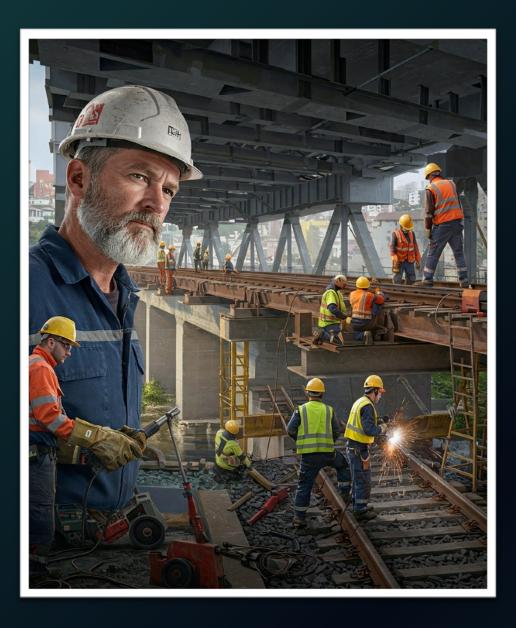
#### **Locomotive Assembly Process**

The assembly of locomotives involves several key stages:

- 1. **Design & Engineering** Computer-aided design (CAD) is used to develop locomotive specifications.
- 2. Fabrication Structural components (chassis, frame, bogies) are manufactured.
- 3. Assembly Various systems (traction, braking, electrical, control) are integrated.
- 4. **Testing & Quality Control** Performance testing, emissions checks, and safety certification.
- 5. **Delivery & Commissioning** Final adjustments before locomotives are put into service.







## **Workforce & Expertise**

- **Highly Qualified Team**: Over **100 experts**, including engineers, technicians, and operators.
- Continuous Training: Investment in skills development and certification programs.
- Engineering & Design: Custom solutions tailored to clients' technical needs.
- Collaborations with Industry Leaders: Partnering with top railway manufacturers and infrastructure operators.

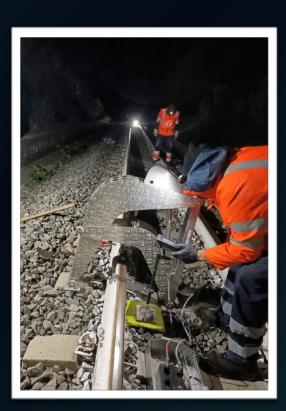




### **Maintenance Services**

- Preventive Maintenance: Regular inspections and servicing to prevent failures.
- Corrective Maintenance: Quick response and repair for operational continuity.
- Component Overhaul: Refurbishing key elements to extend lifespan.
- **Upgrading & Modernization**: Enhancing efficiency with state-of-the-art technologies.

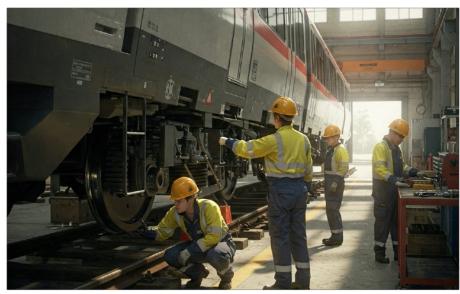






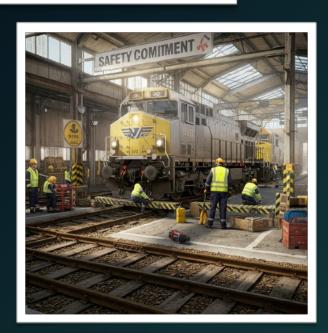






# **Safety Commitment**

- Strict Compliance with RFI Standards: Meeting national and European safety regulations.
- Comprehensive Risk Assessments: Ensuring operational and workplace safety.
- Implementation of Safety Technologies: Al-powered monitoring and automated safety checks.
- **Eco-Friendly and Sustainable Practices**: Reducing environmental impact in operations.





# **Diagnostic Services**

- Advanced Monitoring Systems: Al-driven diagnostic tools for real-time assessments.
- Non-Destructive Testing (NDT): Ensuring component integrity without disassembly.
- Vibration & Thermal Analysis: Detecting wear and potential failures early.
- **Predictive Maintenance Programs**: Reducing downtime and maintenance costs.









## **Client Portfolio & Key Partners**

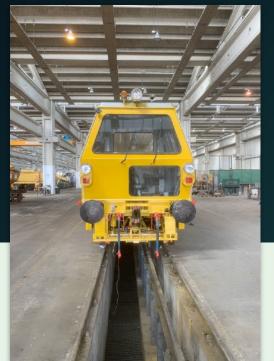
- Trusted by Industry Leaders:
  - Salcef Group Major railway infrastructure provider.
  - Rete Ferroviaria Italiana (RFI) Italy's national railway infrastructure manager.
  - **Geovertical** Specialized in railway system technologies.
  - Goldschmidt Global leader in rail welding and maintenance solutions.
- **Long-Term Partnerships**: Developing tailored solutions with long-standing clients.





















# **Quality Standards & Certifications**

- ISO 9001:2015 Quality Management System compliance.
- RFI Qualification Certified supplier for railway maintenance.
- European Safety & Environmental Compliance Meeting EU railway safety directives.
- Internal Quality Audits Regular evaluations to maintain top-tier performance.











# Recent Projects & Success Stories

- High-Speed Train Overhaul: Successful refurbishment of critical high-speed components.
- Infrastructure Modernization: Collaboration with RFI on key rail network upgrades.
- Innovative Equipment Deployment: Implementation of cutting-edge railway maintenance tools.
- Customer Testimonials: Positive feedback from industry leaders.





# **Corporate Social Responsibility (CSR)**



- **Eco-Friendly Manufacturing**: Reducing carbon footprint in production.
- Support for Local Communities: Job creation and technical training initiatives.
- **Sustainability Programs**: Investment in green energy and resource-efficient operations.
- Ethical Business Practices: Commitment to transparency and integrity.





# **Innovation & Technology**

- Investment in R&D: Exploring cutting-edge solutions for railway efficiency.
- Smart Maintenance Solutions: IoT sensors and Alpowered diagnostics.
- Automation & Robotics: Enhancing precision and reducing human error.
- Railway Digitalization: Integration of cloud-based maintenance management systems.







# **Future Plans & Strategic Growth**

- Expansion into International Markets: Strengthening global partnerships.
- Development of New Maintenance Technologies: Al-driven and automated solutions.
- Increasing Sustainability Initiatives: Transitioning to greener railway practices.
- Strategic Partnerships with Key Industry Players: Strengthening collaboration with rail infrastructure leaders.









### Standard Gauge Graphic Car 1435 mm

The car is equipped with the **ATRON diagnostic system**, designed for precise track geometry acquisition (according to **EN 13848 standards**). Featuring a clear and intuitive graphical interface, it enables real-time visualization of acquired parameters and allows for subsequent processing, external memory export, and the generation and printing of a detailed report complete with graphs.





### Standard Gauge Graphic Car 1435 mm



The standard gauge graphic car is a flatbed railcar with the following characteristics:

#### OPERATING VEHICLE CHARACTERISTICS

Traction during operation: -

Front overhang:

Rear overhang:

•	Maximum length (including buffer	s): 8760 mm
•	Maximum length (excluding buffer	rs): 7500 mm
•	Maximum width:	2250 mm
•	Maximum height above rail level:	1170 mm
•	Wheelbase:	4500 mm
•	New wheel diameter:	960 mm
•	Wheel type:	Reprofiled rim (with safety ring)
•	Suspension type:	Trapezoidal leaf springs
•	Total empty weight:	8 t
•	Maximum load capacity:	24 t
•	Maximum gross weight:	32 t
•	Braked weight (loaded):	22 t
•	Braked weight (empty):	12 t
•	Braked mass percentage (loaded):	68%
•	Track gauge:	1435 mm
•	Engine: -	
•	Nominal power: -	

Maximum number of people allowed in the cabin during movement: -

2130 mm

2130 mm







### Standard Gauge Graphic Car 1435 mm

#### **Main Features**

- Real-Time Data Acquisition and Visualization: Continuous monitoring of track parameters, enabling rapid identification of any deviations from standard thresholds.
- **Pre- and Post-Maintenance Comparison:** Ability to compare data acquired before and after maintenance work.
- Marking of Specific Events: Event marking function for relevant incidents along the track.
- **Report Generation and Export:** Generation of a detailed .pdf report with graphs and export capability to an external USB memory.
- Survey speed: 10 km/h
- Sensor system (gauge/longitudinal) with contact type Plasser&Theurer

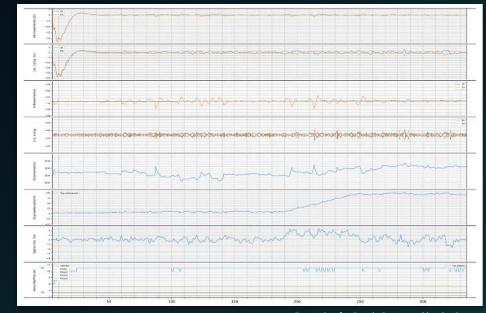


P&T Sensor System

#### **Parameters Detected by the ATRON System**

(with a spatial frequency of 0.5 m)

- Alignment (right and left) D1 (band 3-25m)
- Alignment (right and left) D2 (band 25-70m)
- Alignment (right and left) D3 (band 70-200m)
- Longitudinal level (right and left) D1 (band 3-25m)
- Longitudinal level (right and left) D2 (band 25-70m)
- Longitudinal level (right and left) D3 (band 70-150m)
- Warp on a 3m base
- Cant (superelevation)
- Track gauge
- Deflection and curvature radius



Example of a Graph Generated by the System

# **Our Equipment**

### **⊘MEDTEC**

























# **Our Equipment**

### **⊘MEDTEC**

























Partner with **Medtec S.r.l.** for reliable and innovative railway solutions!

#### **Contact Information**

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Premium Railway Machinery







#### Introduction

Avantgarde is a global leader in the railway industry with over 20 years of experience in the refurbishment, requalification, repowering, and modernization of rolling stocks provided to meet our customers' needs anywhere in the world.

Since 2003, we have provided in over 23 countries worldwide, customized railway machinery fulfilling the highest requirements in terms of quality, reliability, and safety at the most competitive prices in the industry.

Avantgarde's main objective is to give a second life to railway machineries in order to exploit their full potential while offering a cost-saving and environmentally-friendly solution.

Our international presence in the railway industry has increased in the last decade thanks to our strategy of providing superior railway machinery following quality, environmental, and safety standards complied with the country of destination, and supported by a reliable after-sale service. Avantgarde today has settled itself on the world stage as one of the best service providers for refurbished rolling stocks, through a unique highly customized service and an established network of partners.





# Our Office











# **Global presence**



The Avantgarde refurbished machineries have been exported to 23 countries in the world



#### **SOUTH AMERICA**

Argentina Colombia Mexico

### **ASIA**

Japan Cambodia Malaysia Singapore

### **OCEANIA**

Australia





# Our history

Founded in 2003 by **Vincenzo Dagostino**, Avantgarde was born as a **family-run company**, recognized from the beginning for the **high quality** of its products and services thanks to the dedication and hard work of its founder.

**Vincenzo Dagostino's** previous experience in the rail sector has allowed Avantgarde to establish itself on the world market by offering unique refurbished railway machinery together with a very efficient customization and customer care service.

From Apulia to the world, Avantgarde has generated a significant impact at local level, promoting job opportunities and territorial development, and representing one of the few companies in the territory able to export successfully its products worldwide with the support of **SACE** (for more information click here).

We are very proud of our **Apulian origins**, to the point of communicating our traditions on our products, allowing everyone in the world to know and appreciate the beauty of our land.









# Premium Refurbishment

We believe in the importance of the **circular economy** to provide high-quality refurbished and overhauled. railway machinery, creating both a cost-effective and environmentally sustainable product.

For this reason, Avantgarde is proud to be a specialist in the reconditioning of railway equipment, with the aim of improving safety, efficiency, reliability and performance. With the help of our professional team, we customize the machinery to meet the needs of our customers, making sure to provide the products and services with any customization request at the most competitive price on the market.





# Maintenance Specialists

We provide tailor-made maintenance ensuring the best performance on services, railway equipment. Our maintenance services, customized to the specific needs of the customer, guarantee the longevity and optimal functionality of any type of railway machinery.

These services include both **ordinary and extraordinary maintenance procedures**, strictly following the OEM's maintenance regimes.

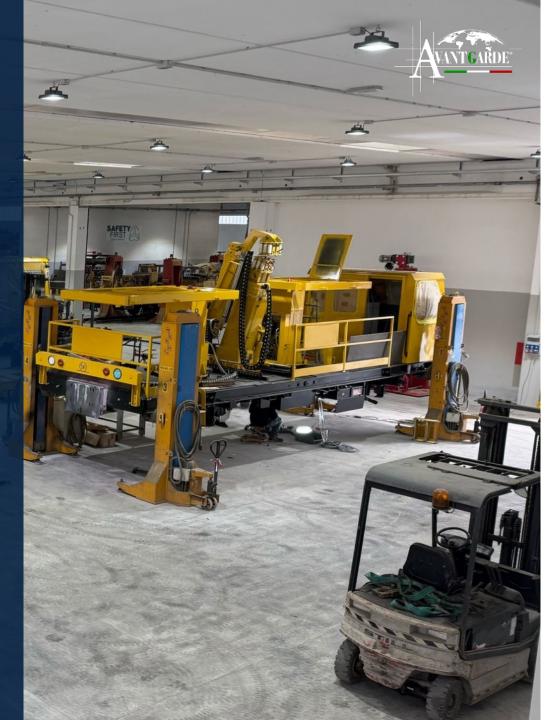
We also offer **on-site support globally**, ensuring a timely and efficient response for our customers.

# Supply of pre-owned machineries

**Avantgarde** offers a wide selection of pre-owned railway machinery available for sale.

**Track maintenance machines, locomotives, passenger cars and freight cars** are among the vehicles we can supply both in their current state and fully reconditioned and customized to meet specific applications and budgets.

List of **machines available** for sale can be consulted by clicking <u>here</u>.





# **Digital Solutions**

Avantgarde aims to develop innovative technologies at the Customer's request to upgrade any rail vehicle in response to the growing demand for safer and more efficient railway operations. Our commitment to innovation ensures the integration of **customized technologies**, providing our Customers with tools designed to optimize productivity and improve performance. Among the railway technologies developed and patented by Avantgarde:

### **AVRecorDATA**

Real-time data analysis event recorder, used for vehicle monitoring and diagnostic in compliance with EN 62625 & EN 14033/1-2 standards

### wRails 2.0

For theoretical track geometry data input and measuring/ recording of track geometry parameters

# Training Program

Avantgarde offers **customized training programmes** to enable technicians to become familiar with any type of railway machinery and the latest technologies.

Our training modules enable apprentices to become highly qualified in the **operational** and **safety protocols** relating to railway machineries. In addition, our experts share their indepth knowledge and best practices for reconditioning railway machines, locomotives and passenger cars, enabling apprentices to undertake such projects with confidence and autonomy.







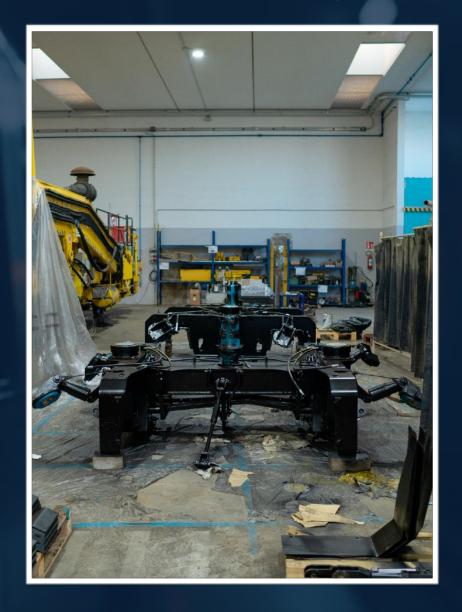


### **Maintenance of armed forces with NATO certification**

Avantgarde's maintenance work carried out recently on some vehicles of the **Italian Armed Forces**, achieved with excellent results, brought us to apply for the **NATO certification** - **AQAP 2110**, which will be obtained in the coming months.

This certification will guarantee Avantgarde to be qualified as "Supplier" for the Italian Armed Forces and NATO, with wide possibilities of development in different sectors.







# Repowering of diesel-electric locomotives

### Rehabilitation and repowering of diesel electric locomotive powered by an eco-friendly solution

We want to offer through our Rehabilitation and repowering project, an alternative solutions for the locomotives requalification, as a modern and viable solution in recovering those diesel electric locomotives, which are no longer in operation and giving an extension of the locomotive's lifespan through an eco-friendly solution.

Avantgarde's goal is to offer this repowering service to recover these locomotives in emerging markets.

Through over 21 years of experience in the railway industry, **Avantgarde has gained worldwide recognition** for its excellence in refurbishing and supplying of track machinery, tailored to meet the specific requirements of our Clients.

We have brought this experience into the Locomotive Rehabilitation and repowering Project, which together with the installation of modern technologies and software, is making this service interesting and attractive for the benefits that it will provide to the end user.



Example of obsolete locomotive



# Repowering of diesel-electric locomotives

### Rehabilitation process through a modern and sustainable approach

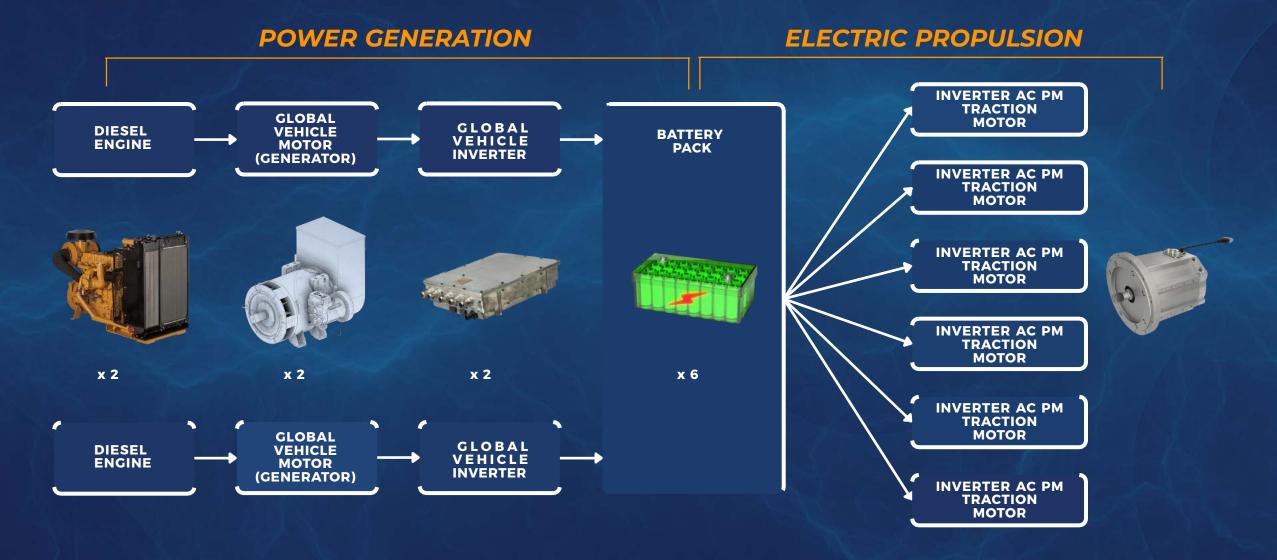
The Repowering intervention is made by **a hybrid solution** by replacing the existing engine and alternator with a **powertrain system** composed by two (2) **Power Packs** (power units made by engine, generator, inverters and cabinets), a **Pack of lithium batteries**, and by the replacement of the existing DC traction motors with **AC motors** with permanent magnets.

This concept makes this application modern, reliable and ease for its installation and maintenance and will provide a **value engineering to the locomotives**, overcoming any issues with the locomotive's obsolescence and lack of spare parts provision.

The strong advantage of having a locomotive driven by multiple Power and Battery Packs over a single engine is the redundancy that makes possible, in the unlikely event of failure of one unit, that the traction is always guaranteed at all times.



# **Powertrain**



# **Repowering Benefits**





- Ease of maintenance and provision of spare parts
- Continuity of work guaranteed
- Engines reliability with long-term maintenance intervals



- Modernization of control and safety systems
- Modular control of the traction power with Power Packs activation
- On-board diagnostic and telemetry data transmission with remote locomotive control



• Reduction in expenses associated with the acquisition of new locomotives Refurbishment vs purchasing a new one results in significant time savings Reduction in fuel consumption



- Reuse of materials from the existing machinery through refurbishment Fuel
- Consumption decreasing
- Reduction of **CO**<sub>2</sub> **emissions**





The Avantgarde ongoing maintenace projects & those scheduled from 2025

### **ABU DHABI**

ETIHAD RAIL
REFURBISHMENT
OF 11 TRACH
MACHINES
2024 - 2026

### **SAUDI ARABIA**

REFURBISHMENT OF 4 LOCOMOTIVES TYPE EMD SD 40 2024 - 2025

### **SAUDI ARABIA**

REFURBISHMENT OF TRACK MAINETENACE MACHINES 2024- 2026



#### **GABOON**

COMMISSIONING OF TRACK LAYING MACHINE SMD 80

&

MAINTENANCE OF TRACK MACHINES 2025

#### DRC

COMMISSIONING
OF PASSEGER
CARS WITH
TRAINING &
MAINTENENACE
2025

### **MALAYSIA**

COMMISSIONING OF TRACK MACHINES 2025













# **Certifications**

Avantgarde has obtained prestigious and highly selective national and international certifications, establishing itself as a **certified and internationally recognized maintenance company in the railway industry**. Avantgarde has been recognized by **CERTIFER** as an **ECM certified** according to Reg. 779-2019 and by **RFI** as an **authorized and certified workshop** for the maintenance of track maintenance machines.

In addition, Avantgarde adheres to the ISO 14001 standard through an environmental management system, with the aim of meeting legislative compliance obligations. This commitment concerns the protection of the environment, the prevention of pollution and the reduction of consumption. In addition, Avantgarde also complies with the ISO 9001 standard through which a quality management system, guarantees our Customers high standards of products and services. Avantgarde is also certified and compliant with ISO 3834-2 for welding and melting of metal materials. Finally Avantgarde is under process of completing the accreditation for the ISO 45001 to create a safer and healthier working environment for employees, guaranteeing high safety standards. We are proud to have reached these important milestones issued by the RINA Certification Authority that guarantees our operations according to the highest standards of quality and safety.





### Discover more about us

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