



# 2018 SAFETY AND ENVIRONMENT REPORT



# ERMEWA GROUP IN 2018



€413m  
2018 Revenue

€238m  
2018 EBITDA

750+  
Customers

30+  
Countries  
worldwide

700  
Employees

**RAILCARS**  
42,000 units



- #2 player in freight railcar leasing in Europe, with a market share of around 17%
- Strong presence across various sectors in major European countries
- #2 largest fleet in Europe and largest fleet in France
- All types of railcars owned, with over 300 different types of wagons
- Average leased fleet age of 32 years
- Strong customer base with blue chip companies

**TANK CONTAINERS**  
42,000 units

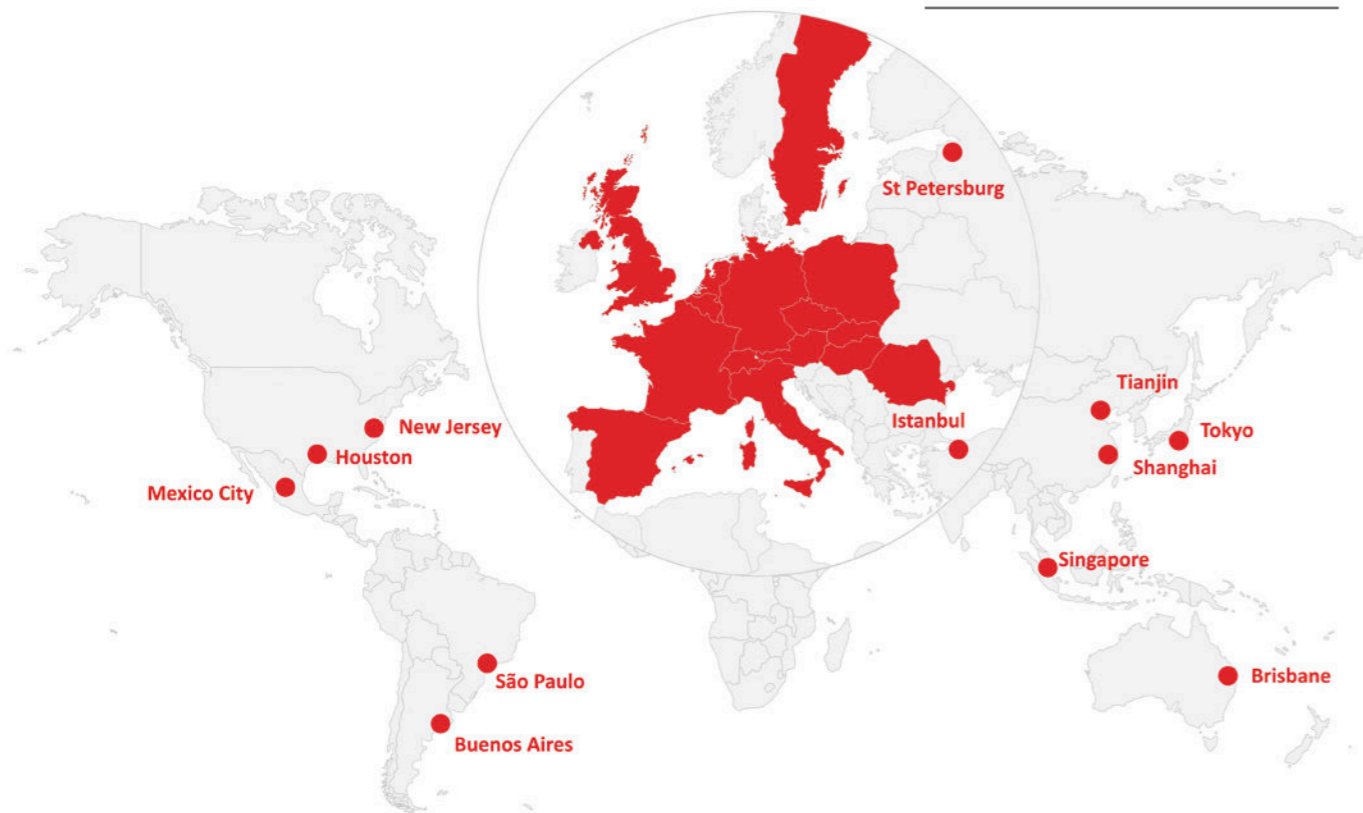


- One of the global leaders in tank container leasing, with a global market share of around 40% and 30% in special and gas tank containers
- Global presence in more than 80 countries
- Dedicated Chinese domestic fleet of 2,500 units
- Average fleet age of 9 years
- Wide range of industrial customers in various segments: Oil, Chemicals, Mining, Transportation, Food, etc.

**WORKSHOPS**



- 6 workshops strategically located across France
- Undisputed leader on the French market
- Supporting the railcar leasing activity and providing services to 3rd-parties
- Service range covering all maintenance needs for railcars: wheelsets & railcar maintenance, transformation, retrofit and new railcar construction
- Design capabilities for new railcars
- European certificates
- Around 45% of external revenue



# SAFETY, QUALITY AND ENVIRONMENT POLICY

Our business operations must fall within a long-term sustainability logic. This means that on top of the need for technical, economic and commercial performance on a day-to-day basis, our Group must depend on fundamentals which guarantee long-term development and make a certain number of commitments towards its employees and partners.

## For Ermewa Group, these fundamentals are

- **First, assets to be maintained:** Group employees' expertise, economic effectiveness of our operations and environmental quality;
- **And second, basic principles to be observed:** risk management, investment by everyone, responsibility shown by everybody, continual improvement process and environmental protection.

## With regard to our commitments, our duty is to

- Ensure the health and safety of our employees and persons involved in our operations.
- Satisfy our clients and assist them to ensure the safety of their operations.
- Deliver reliable, compliant and certified products and services.
- Comply with applicable laws, regulations and procedures.
- Naturally apply a sustainable development approach.
- Maintain employee satisfaction and motivate them to be involved in the continual improvement process.

## In order to meet these commitments,

### WE HAVE

- Implemented a Group Safety Management System.
- Created a Group Safety Management Committee.
- Adopted a common event management method in order to provide optimized feedback.

### WE KEEP

- Controlling compliance with procedures and regulatory requirements relating to Safety, Quality and the Environment.
- Communicating internally on the performance of the Safety Management System.
- Assessing the risks of all our operations by using relevant indicators.
- Providing continuous training to all our employees.

## Ermewa Group Management Committee

David Zindo  
CEO Ermewa Group

Etienne Fallou  
CFO Ermewa Group

Caroline Tomkevitch  
HR Director

Agathe Marie  
Legal & Insurance Director

Stéphane Gavard  
CTO Ermewa Group

Peter Reinshagen  
Managing Director Ermewa

Vincent Martin  
Managing Director Eurotainer

Julien Mathiaud  
Managing Director Inveho



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## MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

Dear Employees,

**1 Group, 3 brands and 4 pillars:** this is how I would simply define who we are and what we do.

Our 3 brands, Ermewa, Eurotainer and Inveho, are well-established on the landscape and are references of quality and service in their respective sectors.

The 4 pillars are the focus of our actions: guaranteed safety, innovation and transformation to better serve our customers, growth for the future of our Group and, finally, sustainable development. They drive our daily actions. They are our “purpose” as a company and are the key to our success in the future. We still have a long way to go, but we can be proud of what we have done.

This report indeed means to provide a comprehensive view of our actions in 2018, and the following highlights are worth emphasizing.

- In 2018, we implemented a new SQE Chart. The entire Group Values and Ethics framework are found Part I of this Annual Report.
- We experienced a busy year 2018 in terms of the number of safety events to manage. Our Safety Management System (SMS) Steering Committee activities listed in Part II are a good reflect of the busy year we experienced.
- Ermewa has been very active in the field of safety with notably the implementation of an audit on all railcars transporting hazardous materials, the adoption of unified maintenance guidelines and the organization of seminars to reinforce safety culture in the company. Partnerships with schools is also favoured to develop training course in connection with the Group activities.
- Digitalization is also a priority. Ermewa entered into a partnership with Amsted Rail to equip the whole fleet with telematics, and is working closely with Knorr Bremse, a brake specialist, to monitor the braking system.
- Ermewa also plays an active part in consortiums such as TIS “Technical Innovation Circle for Rail Freight Transportation” or CFW “Competitive Freight wagons” to offer to its customers innovative wagons but also to improve safety.
- Ermewa Group has been involved in several charity events. Thank you to those of you that contributed to these events.
- We also concluded external growth transactions, notably with Macquarie intermodal fleet, Taylor Minster Leasing and SGTL (Part 6).
- The Container Business Unit broadened its portfolio with the acquisition of new 20ft composite tank containers as a lightweight alternative to steel tank containers.
- Inveho continued to invest in its production tool with a view to improve safety and efficiency, notably with the acquisition of an automatic axle bearing washer and a welding cabin for the bogies for better smoke treatment, better ergonomics and conditions of work.
- Inveho is also very sensitive on environmental matters and supports the Reforest’Action initiative.
- Regulation is critical in our business. New regulation developments are thoroughly assessed, and measures are implemented to ensure full compliance. The enactment of the 4th Railway Package is a major development we will have to integrate in our working processes (Part 5).
- Last but not least, I would like to take this opportunity to congratulate the teams that managed to renew our certifications in 2018 (Part 7).

Happy reading!



David Zindo  
CEO Ermewa Group

## OUR VALUES

### TEAM SPIRIT

#### **We foster a team spirit**

- We identify ourselves as Ermewa Group and share the same values
- We operate as one team with one fleet in each of our business activities
- Worldwide, our teams collaborate to ensure the success of our projects

### PROXIMITY

#### **We know our customers**

- We offer optimized solutions to meet our customers' needs
- Local contacts are our strength to better address our customers' requirements
- Being close to the market as we actively participate in the evolution of our industry

### COMMITMENT

#### **Ermewa Group is a trusted and professional partner**

- We deliver on our commitments to various stakeholders
- We guarantee the highest standard of services
- We empower people to take on challenges

### TECHNICAL EXPERTISE

#### **We master technical complexity**

- Our technical expertise brings real added value to our customers
- We are committed to delivering tailor-made solutions
- We encourage innovative approach

### PROACTIVE

#### **Our approach is proactive and entrepreneurial**

- We anticipate customer needs and requirements
- Response time is one of our key assets
- We think 'outside the box'

### SUSTAINABLE DEVELOPMENT

#### **We care for people and the planet**

- The security of our assets and safe environmental practices are our top priorities
- We value our employees and contribute to their development
- We prioritize long-term strategies and deliver results to our shareholders

## OUR ETHICS CHARTER

### RESPONSIBILITY TOWARDS CIVIL SOCIETY

- We comply with laws and regulations
- We actively manage risks in accordance with sustainable development principles and act in favour of greater environmental responsibility by reducing the overall impact of the transport industry on the planet
- We respect personal commitments provided they do not involve the Group
- We do not tolerate corruption nor encourage illicit practices

### RESPONSIBILITY TO OUR COMMERCIAL PARTNERS

- We are representatives of the commitment and values of the Group
- We believe in free competition and respect our competitors
- We do not accept gifts and advantages that would create a situation of obligation
- We act properly and in an appropriate manner with our customers providing quality, fairness and confidentiality where appropriate
- We confer importance to our partners sharing our ethical principles

### RESPONSIBILITY TOWARDS OUR GROUP AND OUR SHAREHOLDERS

- We contribute to the enhancement of the Group's image by sharing the same environmental, social and governance values
- We develop our business activities responsibly and we stand by our commitments
- We communicate reliable, complete and appropriate information on our business activity and results
- We protect confidential documents and data
- We respect and protect property made available to us
- We avoid conflicts of interest or situations that may be perceived as such
- We fulfil our employment contracts conscientiously

### RESPONSIBILITY TOWARDS OUR STAFF

- We respect obligations arising from the law, statutes and contracts
- We respect diversity and condemn all discrimination
- We promote mutual respect and do not tolerate harassment
- We encourage our staff to consider the environmental consequences of their actions and seek to minimize the impact where it is reasonably practicable
- We maintain a healthy, secure and harmonious working environment
- We respect the individual and his/her private life
- We are committed to resources and competencies development and improvement policy
- We value expertise and support and encourage entrepreneurial spirit



Safety is the core of our internal communication at every layer of the group organization.

## 2.1 PERFORMANCE / ACCIDENTS

Quantitative and qualitative reporting are prepared and allow regular improvement of our working procedures.

Frequency and severity rates for 2018 vs 2017 are as follows:

	2018	2017
Headcount	689	646
Number of days off following Work Accidents	557	539
Severity Rate	0.45	0.48
Frequency Rate	35.81	39.07

Technical Management Group monitors the incidents follow-up and action plans if required.

Each Business Unit (Railcar, Container and Workshop) manages its own incidents.

For Railcar and Container BUs, incidents are first material, with potential external impact on people and/or environment.

### RAILCARS

Since mid-2018, all the railcars incidents are registered and centralized through a single tool in the ERP. Incidents are classified in 4 levels:

- 1 Minor:** limited damages to the wagon, no human, environmental or traffic consequence, no potential impact on safety
- 2 Medium:** damages to the wagon with potential impact on the traffic and on safety, no human, environmental consequence, limited action plan
- 3 High:** at least one of the following consequences: Important damages to wagon and/or injured people, limited impact on local environment, material damages, external rescue team intervention, or potential impact on safety with a spread action plan
- 4 Major:** at least one of the following consequences: Huge damages and /or casualties, environmental pollution, important material damages, external rescue team intervention, media

In 2018, there were 120 incidents in which Ermewa was mentioned at least once

Level 1	61
Level 2	45
Level 3	14
Level 4	0

Among the 14 "level 3" incidents which occurred in 2018, those hereafters have required a wide action plan:

### February 2018

#### Description:

Human incident in Claude workshop in France, workers intoxicated with DCE (dichloroethane) due to insufficient oxygen in the tank.

#### Action plan:

Ermewa has worked closely with the workshop to implement an action plan to avoid any new incident. Ermewa executed several audits with improvements to procedures requested and decided to relaunch production a few weeks after. Action plan is still monitored on a regular basis.

### March 2018

#### Description:

As part of a campaign to monitor the behaviour, defaults were found on 2 grain hopper wagons.

#### Action plan:

Those wagons were sent to workshop to be investigated. Cause was identified as flatness pivot beam with an out-of-tolerance measurement. This default is due to a manufacturing error. A claim was sent to the manufacturer requiring him to provide an action plan to remove any risk in relation with this defect. In the meantime, supervision is deployed as part of the monitoring of this fleet.

### July 2018

#### Description:

Tank railcar transporting hydrofluoric acid had a leakage during discharge on customer's facility in Germany due to a crack in the circular central weld. Precautionary measures have been put in place under the coordination of local authorities.

#### Action plan:

Crisis management procedure triggered, incident monitored by ECM and Safety Group Management. Ermewa made the decision to stop the whole fleet of the wagons transporting hydrofluoric acid. Crisis core team is in charge to investigate and analyse the causes.

### October 2018

#### Description:

Derailment in Italy of a railcar transporting chloroform. Derailment took place in the center of Rapallo. No human or environmental damage, only materials. Primary cause not defined. An investigation has been opened by the Court of Genoa against the legal representatives of the owner, the railway undertaking and the infrastructure manager and is currently ongoing.

#### Action plan:

Crisis management triggered, Ermewa made the decision to check all the wagons with same year and manufacturing characteristics. Investigations were launched and were still ongoing at the end of 2018.

### December 2018

#### Description:

Asbestos found on 2 wagons (bogie pivot liner) revised in an SNCF maintenance workshop in 2009.

**Action plan:**

Ermewa and SNCF have collaborated to identify the fleet potentially involved. Ermewa itself took measurements on wagons with asbestos parts. The results of these controls confirmed that these wagons could continue to be operated without risk to the environment, operators, shippers and railways undertakings. Ermewa provided risk analysis to the attention of all involved parties.

**Main incidents still under investigation****2013 - Incident in Modane wagon 3187 352 6 369 7/Keeper Fret SNCF/ECM Ermewa/Maintenance SNCF (level 4)****Description:**

Runaway of a wagon at the end of the train, collided with a locomotive parked in Modane station.

Ermewa has followed up with the recommendation from French BEA-TT and implemented an action plan in 2015. This action plan deployed by Ermewa, SNCF Mobilités - Direction du Matériel and Faiveley Transport consisted of:

- The removal of screw couplings without compliance marking to European standards; our fleet will be fully compliant by 2027 at the latest.
- Brake distributor: for distributors type C3A & C3W, the manufacturer (Faiveley) needs to find a solution to guarantee the tightness of brake cylinder pipe until -25°C during a life cycle in accordance with maintenance schemes. The manufacturer's recommendation is to change the membrane every 5 years or 800,000 km. According to Ermewa's REX and SNCF maintenance scheme, the membrane was changed every 15 years.

Despite BEA-TT's conclusions and experts who did not find any breach in the maintenance of the wagon, the Trade Court of Nanterre retained the liability of Ermewa, as ECM, for damages incurred by the locomotive as it did not respect the manufacturer's recommendations relating to the brake distributor's recommended periodicity to replace the membrane. Possibility to appeal the judgment is discussed.

**2016 - Incident in Hitrino, wagon 3387 791 5 652 4/Keeper and ECM Ermewa (level 4)****Description:**

On 10 December 2016, a train with 22 railcars transporting HazMat derailed in Hitrino station, Bulgaria. An Ermewa railcar (number 10 in the consist) was hit by a surrounding object during the derailment, which caused the tank to be punctured. This puncture produced a gas leakage which caused an explosion shortly after the derailment. Human toll is heavy with 7 casualties.

**Action plan:**

In accordance with our SMS procedure, Ermewa triggered the Crisis Core Team on 10 December 2016, managed by the CEO and assisted by the Group Safety Manager.

Ermewa's experts went to Hitrino the day after the accident to gather all the data relevant for the enquiry. As ECM and keeper, Ermewa produced all the maintenance documentation required.

Ermewa also made a FEM (Finite Element Modelling) study of the dynamic impact which caused the tank puncture. This study showed that the involved wagon built in 1971 had mechanical characteristics at least as high-performance as a modern railcar.

The enquiry from the Bulgarian authorities concluded that the main cause of the accident was the high speed. Ermewa's railcar was left free of any charge by the enquiry.

**2017 - Cracks on wheelsets BA004/ZDB29**

Ermewa participated to the JNS (Joint Network Secretariat) Task Force formed by EUAR that issued transitory measures to implement until the primary causes are identified. Ermewa has implemented stricter guidelines.

**Cracks on bogies AFR22****Description:**

On 10 November 2017, the French NSA, Etablissement Public de Sécurité Ferroviaire (EPSF) published a safety alert about cracks damage that could affect AFR22 bogies.

Ermewa's fleet has potentially 1,221 railcars involved by this alert.

**Action plan:**

Crisis core team was immediately triggered. Thanks to the involvement of the whole Ermewa team in Europe, 100% of the bogies were controlled before the end of 2017.

During the control, cracks were detected and confirmed.

Ermewa prepared an action plan and presented it to the French NSA. EPSF validated the action plan from which Ermewa conducted a fatigue analysis by finite elements which confirmed the anticipated damage risk of this bogie. On the basis of those conclusions, Ermewa has committed to implement a repair and modification methodology in close relations with the French NSA.

Exceptional measures were deployed by Ermewa's Technical Department to monitor the behaviour of the risk area as long as the repair method is not implemented.

**CONTAINERS**

2 incidents can be reported:

**May 2018**

Tank incident in depot, no injury or environmental damage reported SECS593114-0 for A&AT LLC.

**Description:**

The tank had the head blown off by a pressure-related event where the depot (not our usual depot) apparently utilized air pressure instead of hydraulic pressure to achieve the full test pressure of the tank. Eurotainer was not held responsible.

**July 2018**

URU164248, incident on a highway near Sao Paolo Brazil

**Description:**

Connection between the 2 chassis broke and one of the chassis with the unit EURU164248 tip over. The top side of the unit was heavily damaged. Per the review of the police report, there was no casualty or people hurt during the incident. Eurotainer was not held responsible.

**WORKSHOPS**

Safety is a daily concerns at Inveho where inherent risk of an industrial accident is high (movement of unbraked wagons, handling of heavy parts, work at height, work in confined atmospheres, chemical risks, risk of falls, etc.). Each of these risks gives rise to concrete prevention procedures and actions e.g. inter alia safety briefings, daily on-site safety checks, and constant dialogue within the CHSCT (Safety and Working Conditions Committee). In addition, Inveho constantly invests in its industrial tool to improve both efficiency and safety and comfort of operators.

1 main human incident can be reported in 2018:

**March 2018****Description:**

An operator was walking on a track looking for his team leader and was hit by the locomotive. Consequence: he sustained significant physical injuries.

**Action plan:**

Implemented at different levels: track access, equip the workers with high visibility clothes, update the procedure about operation and intervention on tracks, communicate internally. Access to this area was condemned and the operation procedure recast. Camera will be mounted on the locomotive.



## 2.2 ACTIONS TO IMPROVE SAFETY

Safety is Ermewa Group's absolute priority. Safety is neither an abstract concept nor an accumulation of sometimes abstruse statistics and indicators. It is a simple and concrete promise: to guarantee total safety to our employees in their work and our customers in the use of our resources and services. It is a serious collective responsibility which must be top-of-mind in all our decisions and actions.

### RAILCARS

Safety is a core value at Ermewa, we all strive to ensure safety for our railcars, staff and customers. Whatever our position in the company, we must relentlessly ensure data integrity, which is key to the reliability and performance of our business, and continuously focus on assuring the safety of all the wagons we lease and maintain.

#### Audit on all railcars transporting hazardous materials

Ermewa had to handle high or major level events that occurred in the last 2 years on HazMat wagons. As ECM and keeper, Ermewa is responsible to lease safe wagons which comply with the rules in force.

To reinforce this commitment, Ermewa's management has decided to implement a full risk assessment to which Ermewa is exposed in the context of the operation of its wagons' fleet transporting hazardous materials. At the end of this audit, Ermewa's management shall determine, with the support of the Group Safety Management, the actions that may be required to reinforce the safety of the operations of wagons dedicated for transportation of hazardous materials.

#### Ermewa single maintenance guidelines

As ECM and as part of the maintenance development function (Regulation EU445/2011), Ermewa is responsible for the management of the maintenance documentation, including the configuration management, based on design and operational data as well as on performance and return on operated experience. In 2018, Ermewa made the decision to merge the existing maintenance guidelines (Ermewa, SNCF, VPI) through a single maintenance guideline: Ermewa/VPI to simplify its management and reduce the risk of errors.

### CONTAINERS

Eurotainer established a partnership with gasket provider VSP (and their global distribution partner Klinger) for high-end equipment to enhance reliability and security of the assets.

### WORKSHOPS

Ensuring the safety of staff and equipment is a priority of Inveho's workshops.

HSE teams carry out a daily safety visit in every workshop. In 2018, they started to use a tablet with special software ensuring maximum responsiveness.

The first objective is to check that people are wearing PPE (Personal Protective Equipment), that safety instructions are clear for each operator and to examine environments where the teams are working. After each visit, a report is sent to the team leader or manager. If anomalies are reported (operator not wearing PPE, defective or missing safety equipment) an action plan is implemented (awareness training, equipment update).

As allowed by ECM regulation (445/2011), Ermewa has decided to outsource function D « Maintenance delivery function » to each workshop contractually bound to Ermewa. In this sense, the workshop is in charge of delivering the required technical maintenance of a freight wagon or parts of it, including the release-to-service documentation.

As part of this function, trainings are regularly held in the workshops when the maintenance guidelines evolve.

## 2.3 SAFETY MANAGEMENT SYSTEM

Ermewa Group has implemented a Group Safety Management System, created a Group Security Management Committee and adopted a common event management method to provide optimized feedback.

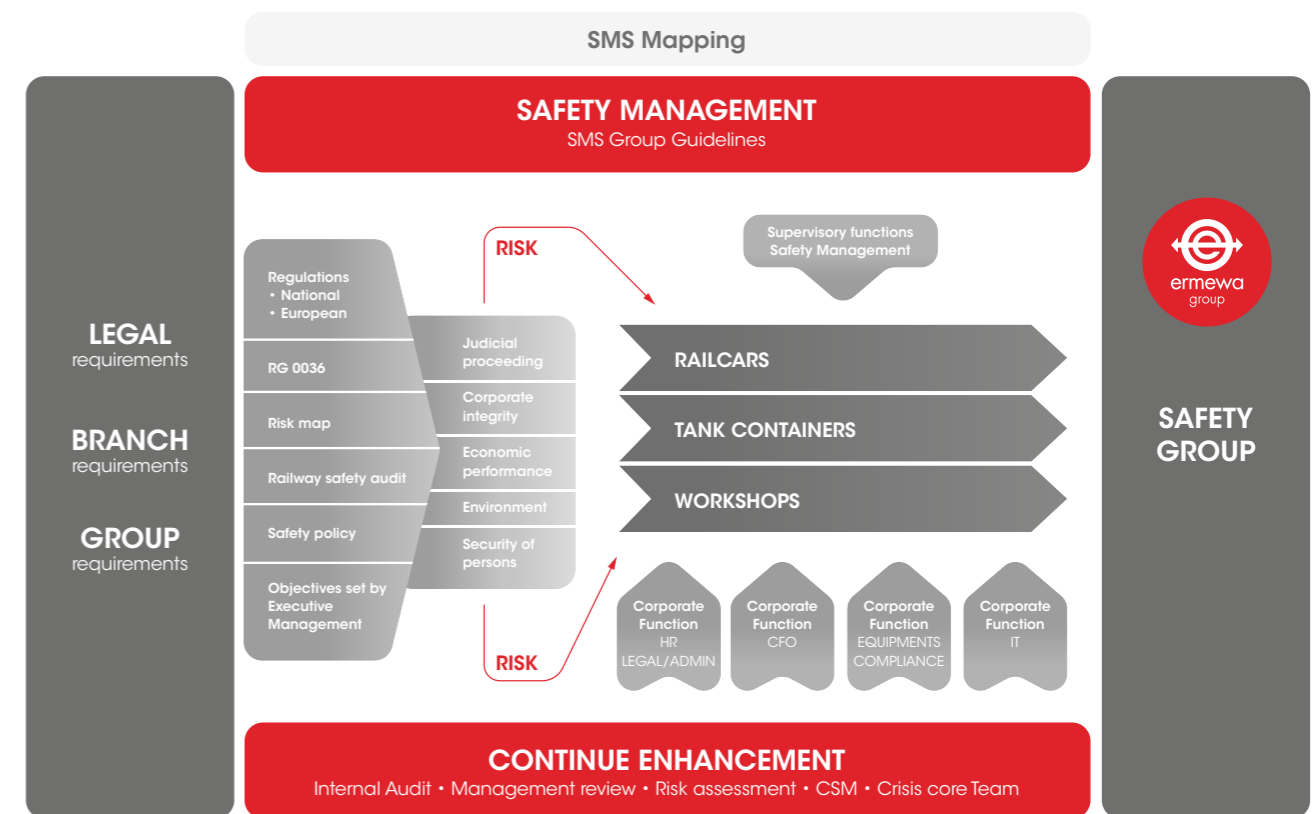
The SMS Steering Committee comprises the CEO, Safety Manager, coordinators from the 3 Business Units (Railcars, Containers and Workshops) and Corporate Functions (Technical Management, Finance, HR, Legal and IT).

The SMS guarantees the control of all those risks created by each activity of the Group and organizes the supervision and control of the risks in order to:

- Anticipate risks and safety (risks assessment),
- Gather and classify events in relation with safety (traceability).

## 2.4 RISK ASSESSMENT AND TRACEABILITY

One of the goals is to assess the risks of all our operations summarized in the mapping below.



The adoption of a common culture and the application of harmonized rules are the keys of the SMS functioning in order to reach the safety performance goals.

Integration of human factors in the decisions and in the return of experience process is essential to manage the risks and improve the railway safety.

This approach involves the knowledge of individual and collective behaviours.

Safety cannot bear improvisation and each evolution and/or change must be thought out to ensure risk control. In that way, the Group must adopt common rules in terms of safety. As a specific part of railway safety, the execution of the Common Safety Method is required by the regulation 402/2013/EU.

A harmonized process has been required within the SMS so that all the entities can use a common safety method. The risk management tool deployed assesses the systematic risk from an event which could be impacted by a change.

## 2.5 SKILL, TRAINING AND KNOW-HOW

Due to its business, Ermewa operates in a systemic environment and a high level of expertise is required. In order to meet this expectation, Ermewa decided to work on creating a dedicated training system. A training structure project was initiated in early 2019 and will provide all employees with the training they need but also develop learning and mentoring. In order to carry out this project, Ermewa aims for a partnership with a recognized and competent training body.

Internally, an E-Learning tool has been developed in order to propose an accessible learning tool to everyone.

The first step of these deployments concerns the Railcars Business Unit.

### PARTNERSHIP WITH SCHOOLS

Mitigating the risk of loss of skills is a key goal for our activity.

In this context, Ermewa celebrates students; several projects are under way to highlight careers within Ermewa and make young people aware of jobs in the rail industry. Ermewa closely works with ESTACA (Ecole Supérieure des Techniques Aéronautiques et de Construction Automobile/Aeronautic, Aerospace, Automotive and Railway Engineering School) or Club of Trainees and International Volunteers in Business (Club des Alternants & VIE). Last summer, Ermewa's Prague office organized an excursion for Czech young students in cooperation with the workshop RYKO a.s. The objective was to raise awareness of career opportunities in the railway sector by introducing both companies.

### TRAININGS

The employees of the Group's French offices had the opportunity to be trained on:

- First Aid
- Driving under severe conditions
- Use of fire extinguisher

## 2.6 SAFETY CULTURE

Most of the processes within the SMS will impact the working conditions and environment of the Group's workers; therefore, it is essential that human factor knowledge and methods be integrated into the SMS.

The fundamental principle of human-centered design with worker participation should be established within the SMS throughout the life-cycle of the system.

The benefits of integrating human factors into SMS are:

- Improved safety
- Well-being
- Satisfaction
- Effectiveness
- Efficiency



Human factors concerns the optimization of human performance in the workplace for safety, well-being and efficiency.

They consider working environment from a human-centered point of view, looking at the whole system and its influence on the way people behave and interact with railway activities.

Human Factors focus on the 'fits' between the user, equipment and their environments.

Human Factors play an increasingly important role in modern complex, safety-critical systems.

Even when some processes are automated – often as a measure to reduce human error – people are an essential part of the organization and system.

People are at the centre of this technological, social and organisational system and are the key to success or failure.

A safety culture will grow and evolve where there is strong management, where there is active involvement of the workers and where there is trust and cooperation at each level of the organization.

### SEMINARS

To promote a safety culture within the Railcar BU, Ermewa organized 3 internal seminars in 2018:

- Technical meeting in March: Participants were made aware of the consequences of a major railway accident. The example selected was the Viareggio, Italy accident (one of the most tragic railway accidents in Europe) with the reading of the requisitions and heavy sentences for the management of the railcar leasing company involved but also for all the other stakeholders (railway undertaking, infrastructure, workshops in which the maintenance of the wagon took place).
- Customer Service meeting in October: One of the goals of this seminar was to highlight the tasks of a customer service that could have an impact on railway safety.
- Sales meeting in November: Safety was raised through digitalization; trainings on that topic have also been implemented.





**RAILCARS**

**Chlorine railcars**

Regarding the existing fleet, railcars for use in Switzerland had to be refurbished by 31 December 2018 at the latest according to specific recommendations. Moreover, according to RID regulation, on class II gas railcars built before 1 October 1978 were or will have to be scrapped between 2017 and 2029.

Chlorine is one of the most dangerous products to transport in a tank railcar.

Ermewa began manufacturing chlorine railcars with a passive safety level higher than the level required by national, European or international regulations. The REX was taken into account to build the technical specifications.

Active safety will also be part of this railcar thanks to digitalization.

**Digitalization**

Ermewa's goal is to have 20,000 "smart wagons" equipped with telematics device by 2022.

In May 2018, an agreement between Amsted Rail and Ermewa was signed. The aim of this agreement is to make rail freight transportation more attractive to shippers in Europe thanks to digitalization and using IONX products. Indeed, digitalization will allow clearer visibility of our customers' rail supply chain, optimization of their supply chain and cost reduction.



Ermewa has signed a partnership agreement with CFW (Competitive Freight Wagon) whose concept comprises different features such as the design of a substantially new railcar with:

- Real lightweight construction
- Low noise emissions
- High speed and acceleration
- Advanced communication



Ermewa is also member of the TIS (Technical Innovation Circle for Rail Freight Transportation)

The goal is to draw up viable proposals for how rail freight railcars can be further developed (innovative bogies, brake systems, wheelsets) and new technologies (telematics, automated operations such as brake test) introduced on a step-by-step basis between now and 2030.

**CONTAINERS**

In 2018, after a thorough analysis of the available composite tank container manufacturers, Eurotainer has placed an order and recently taken delivery of new 20-foot composite tank containers from Omni Tanker.

Eurotainer chose Omni Tanker due to its years of expertise in composites, superior design and willingness to work with Eurotainer to build tank containers that meet the needs of its global client base.

Omni Tanker was looking for a tank container leasing company that could help them expand globally. Omni and Eurotainer are now working together to provide a product offering a lightweight alternative to lined/coated steel tank containers.

Located in Australia, Omni Tanker is one of the world's leading composite technology and manufacturing companies. Omni Tanker owns proprietary composite materials technology, applied to the manufacture of high-technology composite tanks with exceptional chemical resistance and low tare weight for bulk transportation of corrosive and high purity chemicals.

It is these two primary attributes that separate Omni Tanker from the competition and make its product the perfect choice for Eurotainer. The ability to offer its clients a safe, lightweight, durable, easy-to-clean and versatile composite tank container has been a goal of Eurotainer for some time. Omni Tanker has delivered with breakthrough technology that will transform the tank container industry – a perfect fit for Eurotainer's vision and commitment to provide innovative high purity and corrosive chemical tank container equipment to its global customer base.

The selection of Omni Tanker is in line with Eurotainer's strategy to be the global leader in specialized tank containers. Eurotainer was proud to unveil and introduce the new composite tanks at their Customer Technical Day event in Houston, Texas USA.





**WORKSHOPS**

Inveho bought an automatic axle bearing washer.

This high-performance machine, which is the only one in use in Europe, will increase workplace comfort for the staff and improve productivity and quality.



Another important investment concerns a welding cabin for the bogies for better smoke treatment, better ergonomic and working conditions in the workshop.

**RAILCARS**

**Corporate Social Responsibility**

Corporate Social Responsibility (CSR) is a self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public. To meet our customers' expectations, Ermewa opened an access via the platform Ecovadis. The score of our assessment in 2018 was 51/100, as a confirmed level (Silver). Average score of all the companies assessed by Ecovadis was 42,4/100. The following topics are covered:

- Environment
- Social
- Business ethics
- Sustainable purchase

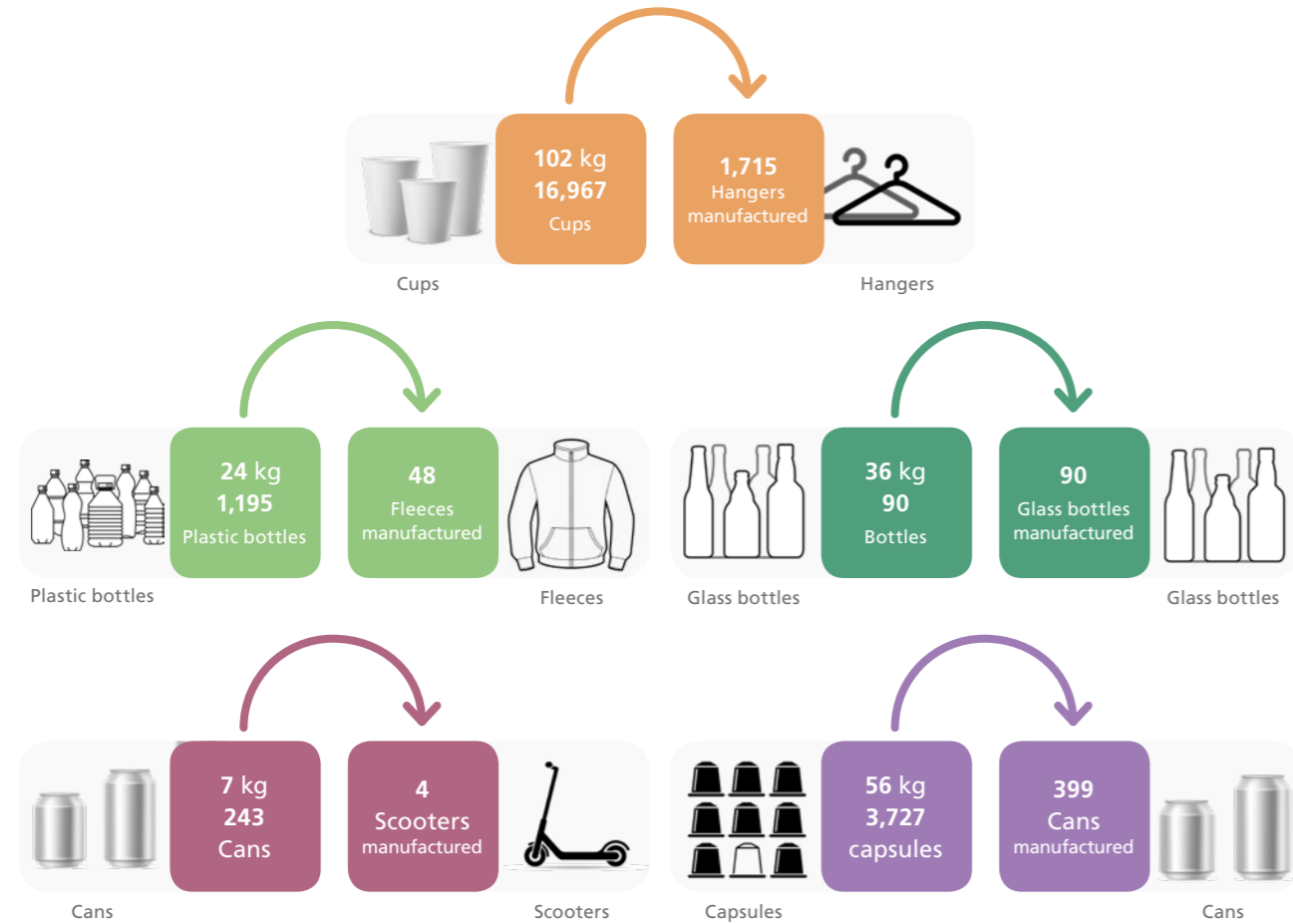


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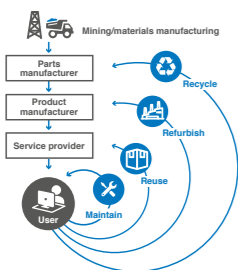
**Recycling**

886 kgs of waste were recycled in 2018 (plastic cups, plastic and glass bottles, cans and caps) in the Levallois Office. Here are the results of the waste-to-energy-conversion:



**Circular Economy**

A circular economy is a major economic and environmental opportunity for the coming years. It proposes to rethink our methods of production and consumption to optimize the use of natural resources and thus limit the waste generated.



The circular economy is at the core of our business model for 60 years. As a pioneer of circular economy, we maintain, reuse, refurbish and recycle our fleet of 42,000 railcars.

Our dedicated teams redeploy railcars nearing end of lease for new use all over Europe.

Every month, Ermewa manages more than 4,000 maintenance operations across Europe and plans to improve maintenance efficiency by around 25% using predictive technologies.

In 2018, Ermewa refurbished more than 1,000 railcars and extended their lifetime by at least another 10 years, and recycled 2,000 railcars to produce high quality steel.

Circular economy diagram adapted from the Ellen MacArthur Foundation Diagram

At the end of every railcar's life, all non-steel materials are recycled or reused. For example, we work with an environmentally-responsible French company which manufactures handbags and accessories using recycle railcars tarpaulins.

To go further and improve the efficiency of the circular economy, digitalization is planned to equip our entire fleet. With analysis of data from on-board sensors, Ermewa will have the capability to refurbish every railcar based on its individual condition.

For Ermewa and its stakeholders, the circular economy, is a triple win with economic, environmental and social benefits.



Unique and original bags were made in France from recycle train covers: www.bilum.fr.

**Digital Perrier Train**

The new railway line linking the Perrier Vergèze factory (the site of the sparkling water spring in the south of France) and the port of Fos-sur-Mer was inaugurated on 17 October 2018.

Created in 1898, this freight line had been abandoned by Perrier in 2007.

From now on, Perrier will emit 2,500 t less CO<sub>2</sub> each year by reducing the number of transport trucks by 27,000 per year. This 80% electric train will transport 54 containers per day thanks to the rental of container wagons built last year. Equipped with Amsted Digital Solutions technology, the train will be geolocated allowing Nestlé Waters and its forwarder Bolloré Logistics to access the position of the railcars, the entrances/exits of the sites and soon ETA (Estimated Time of Arrival). Our client will be able to trace each single bottle of water from the plant to every single shop in North America.





**WORKSHOPS**

Inveho is supporting an environmental initiative through the Reforest'Action programme. To counterbalance the significant use of wood in its activities, particularly when changing Ermewa railcar flooring, Inveho decided to plant 2,000 trees as part of the reforestation project in the Ardennes, near Verdun (northeastern France).

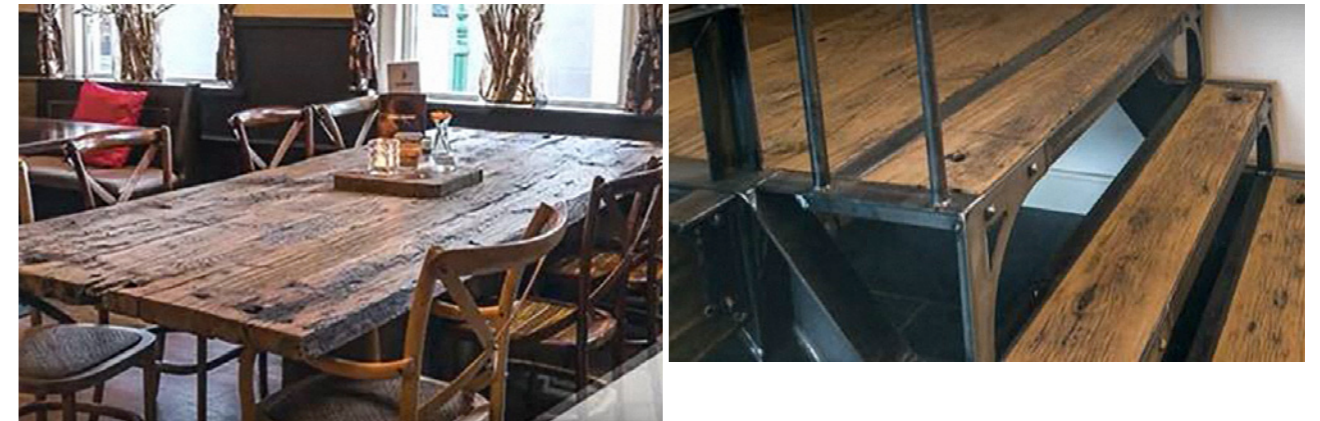


**Refurbishment and Recycling**

Inveho has already converted 40 T19 gondola railcars for Ermewa (bulk transportation). The work consists of several stages: structural reinforcement, general overhaul, modification of flooring, disassembly of all covering mechanisms, painting and lettering.



Furthermore, a company in the Netherlands transforms the flooring of those wagons into dining tables or staircases.



**Health and Wellness**

Convinced of our Group's strength thanks to its diversity, equality and more generally its openness, the Group gave its employees the opportunity to get involved in and support causes like mental disability through the organisation or participation in sports events associated with the Special Olympics. On June 2018, 14 employees from the Ermewa Group and 5 Special Olympics athletes in 5 teams took part in the charity race organized at La Défense (Paris).



Action for Necker children's hospital (Hôpital Necker-Enfants malades) in Paris: employees of Ermewa Group headquarters in Levallois-Perret participated in the toys collection organized in aid of the children at Necker children's hospital, a specialist paediatric unit and reference centre for rare conditions and serious and complex diseases. Ermewa Group also donated €1,500 to this establishment.





## RAILCARS

### Implementation of the 4th Railway Package (RP)

- The 4th Railway Package is a set of legislative texts designed to complete the single market for rail services (Single European Railway Area).
- The 'technical pillar', which was adopted by the European Parliament and the Council in April 2016, enhances the role of the agency by introducing new tasks to ensure a uniform implementation of the EU framework. It includes:
  - EU Regulation 2016/796 on the European Union Agency for Railways
  - EU Directive 2016/797 on the interoperability of the rail system within the European Union
  - EU Directive 2016/798 on railway safety

Effective date: 16 June 2019. The main changes are:

- A renewed framework for railway safety aiming at promoting a safety culture
- An enhanced role for the Agency in the EU rail system:
  - As of June 2019, the Agency will issue vehicle authorisations (currently vehicle authorisations are issued by national safety authorities e.g. EPSF in France, EBA in Germany)
  - The Agency will also be responsible for managing the 'one-stop shop' IT tool through which all application files for vehicle authorisations (EU Regulation 2018/545 of 4 April 2018) shall be submitted

Authorisation applies to vehicles and vehicle types. A vehicle authorisation for placing on the market (APOM) will always result in a vehicle type authorisation granted at the same time.

A new vehicle type and/or vehicle must always be authorised. Where changes are made to the vehicle type and/or the vehicle, be it enough of a change to the applicable rules to require a renewed type authorisation, a change to the design (dependent on the scale of the change) or a change to the area of use, there is a need to apply for an authorisation.

If an already authorised vehicle type and/or vehicle is changed, the extent of the changes must be analysed.

A new authorisation is required if:

- Parameters affecting technical compatibility between the vehicle and the area of use have been changed.
- Overall safety level may be adversely affected by the change, or the relevant TSI requires it.
- An unchanged vehicle requires authorisation if there is a change to the area of use.

This regulation will have an impact on our activity in case of:

- Newly built railcars
- Modification of existing railcars

### Revision of Technical Specification for Interoperability (TSI NOI and WAG)

The main revision regards Commission Regulation (EU) No 1304/2014 of 26 November 2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' (NOI TSI)

Enactment: 2nd half 2019

Last Draft: from 8 December 2024, wagons within the scope of Regulation (EU) No 321/2013 which are not covered by point 7.2.2.2 of the Annex to this Regulation shall not be operated on the quieter routes.

**Existing wagons not compliant with TSI WAG and NOI TSI will have to be fitted with quieter brake blocks (composite K or LL) or brake discs for the service brake function.**

A 'quieter route' means a part of the railway infrastructure with a minimum length of 20 km on which the average number of daily operated freight trains during the night-time.

Ermewa was part of the task force which led the EU to adopt this TSI and preserve the freight competitiveness. Ermewa got a subsidy from the European Union to mitigate the costs of retrofit; railcars fitted with cast iron brake blocks are retrofitted by LL composite brake blocks.

By the end of 2018, Ermewa retrofitted 5,500 railcars.

Those changes have a major impact on our business activity and it is important for us to anticipate change and implement measures early enough to secure the existing business but also to develop it.

## CONTAINERS

No major impact on regulation in 2018.

Worthwhile mentioning that Eurotainer's partner Omni Tanker is member of the UN workgroup involved in preparing the UN-IMO Regulation for FRP (Fibre-Reinforced Plastics) tanks.

## WORKSHOPS

Maintenance documentation such as VPI is regularly updated, the workshops have to follow up these changes and inform the people involved.

Entities in Charge of Maintenance (ECMs) subcontract the maintenance delivery function, which delivers the required technical maintenance of a freight wagon or parts of it, including the release to service documentation. Each ECM manages its own maintenance documentary, the workshops must regularly consider the changes to repair the railcars accordingly.

The revision regarding the EU Commission Regulation No 1304/2014 of 26 November 2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' (NOI TSI) also has an impact for the workshops in charge of retrofitting the noisy railcars with quieter brake blocks (LL composite brake blocks).







Our vision is to continue to put safety and sustainable growth at the core of our business.

Our mission is to pool resources and technologies, invest for our customers, ensuring them optimal performance and safety.

Our target is to continue to push forward our know-how and skills via an internal training system for the benefit of our business and operational activities.

Our ambition is to ensure that our R&D investments produce results that support the virtuous development of rail freight transport for future years.



**ADS:** Amsted Digital Solution

**APOM:** Authorisation for Placing On the Market

**ATEX:** Explosive Atmosphere

**BEA-TT:** Bureau Enquête et Accident-Transport Terrestre

**BU:** Business Unit

**CEO:** Chief Executive Officer

**CSR:** Corporate Social responsibility

**EBA:** Eisenbahn Bundesamt

**ECM:** Entity in Charge of Maintenance

**EPSF:** Etablissement Public de Sécurité Ferroviaire

**ESTACA:** Ecole Supérieure des Techniques Aéronautiques et de Construction Automobile

**ETA:** Estimated Time of Arrival

**EUAR:** European Union Agency for Railways

**FEM:** Finite Element Method

**FRP:** Fibre-Reinforced Plastic

**JNS:** Joint Network Secretariat

**LPG:** Liquid Petroleum Gas

**NOI TSI:** Noise Technical Specification Interoperability

**NSA:** National Safety Authority

**REX:** Return on operated Experience

**RID:** Regulations concerning the International Carriage of Dangerous Goods by Rail

**SMS:** Safety Management System

**SQE:** Safety Quality Environment

**TML:** Taylor Minster Leasing

**WAG TSI:** Wagon Technical Specification Interoperability

**Special thanks to  
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