

Eress

MAGAZINE

2023





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ERESS

Eress Provides Stability in Uncertain Times

The war in Ukraine continues, our world faces continuing uncertainty even after the worst of COVID and energy prices surge. At times they have been almost ten times what they were, significantly impacting train companies with regulated ticket prices.

This explains why the need for energy savings increases with escalating prices as the drive for sustainability intensifies. Eress continues to provide accurate data, making it possible to control and save energy.

Director of Eress, Dyre Martin Gulbrandsen, explains

“The bigger the ship, the slower it turns. Based on the scale of the railway sector in Europe, the move towards greater sustainability is progressing with unprecedented speed. We're pleased with the significant progress made in 16 years at Eress.”



THE EXPANSION OF ERESS PARTNERSHIPS

Historically, borders between countries have been barriers to ground travel. With its Erex 2.0 system, Eress makes cross-border railway traffic more efficient for train companies.

In 2022, Portugal joined the Eress family as a test partner. The testing continues to look promising as Portugal's highly skilled team implements the solution. Cross-border collaboration becomes much easier for Portugal since Spain also uses the Erex system. The Infrastruturas de Portugal and Eress teams have managed the test period almost entirely virtually.

THE NEW ERESS STEERING GROUP IN 2023

With a strong, stable foundation of organisation, the Steering Group leads Eress as we move into the future. During the last year new representatives from Sweden, Denmark, Finland, Switzerland and Norway have joined the Eress Steering Group. This means five of the nine are bringing a new force into the partnership.

“Every new member joins with specific experience and unique perspectives. Each one challenges us to improve in different ways. I have been here since the beginning, so I always look forward to exchanging ideas with new members to see how we can improve,” continues Gulbrandsen.

IMPROVEMENTS IN THE ERESS IT SYSTEM (EREX 2.0)

Probably the most radical change in 2023 took place in January. The new Erex 2.0 technology moved to the Cloud. Erex 2.0 in the Cloud was the next natural step based on where technology has progressed recently. This move has several exceptional benefits, like:

- Standardised Solutions – Using the Cloud to access Erex 2.0 allows partners to all have the same access.
- Reduced Costs – We are now able to offer a lower system cost than what a physical service would represent.
- Greater Efficiency – Productivity increases as Eress Partnerships grow and more countries work together.
- Easy to Scale – We can scale up and down for specific performance, paying only for what is used.

Gulbrandsen confirms that security is very high on the agenda. “Every task the developers undertake requires heightened security now. We conduct regular hacking tests for vulnerabilities. This is the new normal in the technology world.”

Eress follows strict restrictions from the owners and the Steering Group. The first requirement is that the Cloud has to be hosted in the EU, with the same requirements in all countries. Eress focuses on equality among all partners in every aspect of the

business.

CONTINUING CLIMATE-FRIENDLY WAYS BY WORKING VIRTUALLY

The shift to virtual work during the early days of the pandemic meant utilising virtual meetings in situations where in-person meetings were routine. Once travel opened back up, Eress decided to maintain those climate-friendly working methods.

Now, to disseminate information, the first choice is to use virtual meetings. Digital conferences such as Eress Events draw a wide digital audience of hundreds. Internal meetings, specialised testing sessions, meetings large and small support active discussions using virtual platforms.

Eress distributes newsletters and other publications digitally to partners and other stakeholders to support transparency and openness.

Eress has always worked in several European countries, so digital collaboration methods have existed since the beginning. Now, the combination of Teams and physical meetings is the best of both worlds.

JOIN TOGETHER FOR AN ECO-SMART FUTURE

Eress and Eress Partners continue to focus on sustainability in this volatile period that contributes to rising costs. Every Partnership adds more synergy and ideas to help the railway sector successfully move into the future.

PARTNER

Luxembourg: CFL Railway Company

Founded in 1946, CFL is an integrated railway company that unites the roles of infrastructure manager and passenger railway undertaking. The group has evolved beyond its initial role as the Luxembourg National Railway Company, with its present-day operations including bus services, parking facilities for cars and bikes, and a car-sharing service, among others.

The group includes freight activities such as the multimodal freight hub of Bettembourg, the inland harbor of Mertert and its own freight railway undertaking, CFL Cargo.

CFL is an important economic player in the region and the backbone of national and cross-border public transport. It is the country's biggest employer.



DIGITALIZATION PROJECTS

Important investments into both infrastructure and rolling stock do not only increase the offer but also greatly modernize railway operations in Luxembourg. To cite just a few:

- Security is ensured by the European Train Control System (ETCS Level 1 Full Supervision) which is mandatory in all of Luxembourg. In 2022 the first of a new generation of digital signaling boxes went operational, reducing the complexity of track-side signaling.
- In order to meet evolving customer needs, real-time information is now accessible through the company's website and mobile applications. Railway platforms have been equipped with information screens, audio announcement systems, and free public WiFi. Future investments will further broaden the scope of information provided and improve prediction accuracy.
- There are ongoing efforts to leverage technology to enhance efficiency, particularly in terms of energy use and the capacity of the railway infrastructure. CFL is working towards achieving the Automatic Train Operations Grade of Automation 2 (ATO GoA2) in the coming years. In the meantime, the company is currently testing train runs with a connected Driver Advisory System (c-DAS), an important steppingstone towards this goal.

FREE PUBLIC TRANSPORT

The transition to free public transport in Luxembourg was a political decision in a greater strategic plan to promote the use of public transport and the relative modal shift. The arguments frequently cited were threefold:

1. reducing of road traffic congestion as many commuters rely on their car ;
2. environmental concerns to foster more sustainable means of transport ;
3. promoting social equity by making mobility accessible to all.

This step may seem drastic on the surface, but it's important to note that taxpayers were already covering more than 90% of all public transport costs. Moreover, this shift has not resulted in, nor is it projected to cause, a decrease in resources allocated to the railway sector. For instance, train attendants now focus on providing customer information and ensuring smooth railway operations, as opposed to checking tickets. Investments in infrastructure and rolling stock are projected to maintain high levels for the foreseeable future, further underlining the commitment to a well-functioning, accessible public transport system.

STATISTICS 2023

Railway Energy in Europe 2023

In 2023, for the seventh consecutive year, the Sustainable Development Foundation conducted a survey on behalf of Eress aimed at European operators of the rail sector (IMs and TOs). Since 2017, the European outlook has undergone a huge shift due to the increased awareness of environmental issues and the urgency of effective interventions to counteract the effects of climate change. At the political level, the launch of the Green Deal was an important step towards the adoption of sustainable policies.

Nevertheless, in today's environmental debate there are often catastrophic or too technical tones, which can discourage the public and create the impression of helplessness. Together with an awareness of urgency, therefore, what is needed is a more positive and pragmatic approach that values actions with a positive impact in terms of sustainability.

This is the case of the railway sector, which has historically been considered the sustainable alternative to other, more polluting modes of transport - in fact, it has been identified by the Green Deal as one of the main drivers of the decarbonization of the transport sector - and, as the survey showed, is constantly committed to improving the environmental impact of its activities through concrete actions.

In fact, the Railway Energy Survey in Europe 2023 has highlighted some key issues:

- Operators are, again this year, improving energy efficiency by using meters. Their number is constantly increasing: for 2024, all respondents report that they will have more meters than today or that all units are already equipped.
- All operators are implementing new technology as alternatives to fossil fuels to end diesel use.
- 3 out of 4 companies have set energy efficiency and/or greenhouse gas emission in line with Paris agreement and in many cases at a very ambitious level.

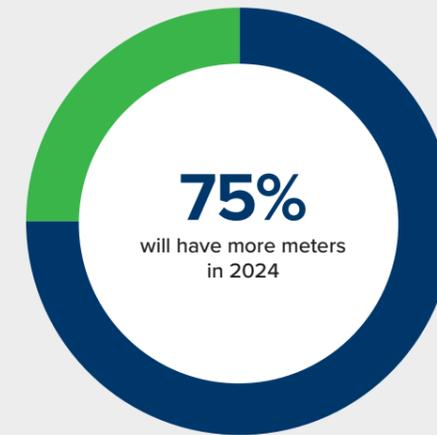
Where do you work? I work for...

- Infrastructure Manager (66,7%)
- Train Operator (33,3%)



Do you expect to have more meters in 2024?

- Yes (75%)
- No, if no explain why (25%)

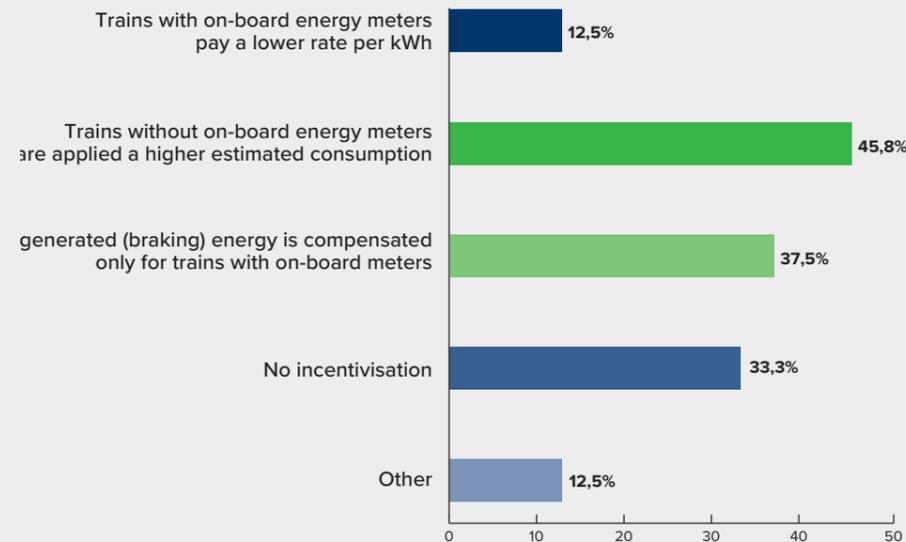


How many meters do you have in your country?

Infrastructure Manager	
Austria	2.000
Belgium	563
Denmark	3.500 KM / Today, around 820 kilometers of railway is powered.
Hungary	311
Norway	610
Portugal	279 meters - all electric vehicles have (old) meters installed. No vehicles yet with EN 50463 compliant meters.
Romania	900
Slovakia	390
Slovenia	200+
Sweden	830
Switzerland	1.900
The Netherlands	525
UK	12.000

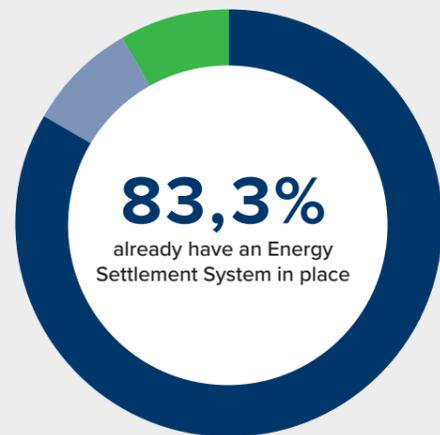
Train Operator	
Czech Republic	271
France	1.600
Germany	130 in many countries.
Italy	300+
Portugal	206
Switzerland	130

How is the installation of on-board energy meters incentivised in your country? (multiple choices allowed)



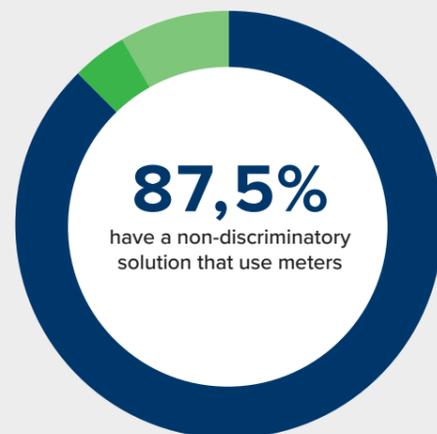
Do you have an Energy Settlement System to correctly handle metering data from trains for billing purposes?

■ Yes, we already have an Energy Settlement System in place (83,3%) ■ It is in progress (8,3%) ■ No (8,3%) ■ I don't know (0%)



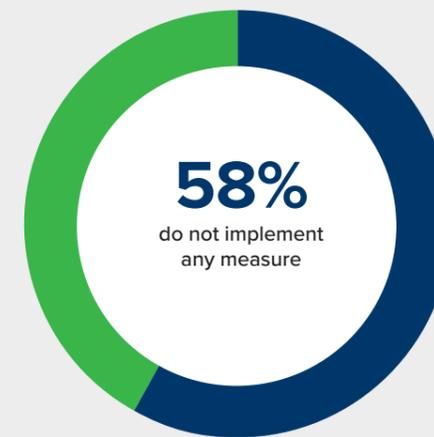
Do you have a non-discriminatory solution to correctly invoice train companies that use meters?

■ Yes (87,5%) ■ No (4,2%) ■ I don't know (8,3%)



In your country, did the government implement any measure to support railway companies considering the rising energy prices?

■ No (58,3%)
■ Yes. If yes, what kind of measure? (41,7%)



Austria	one time support
Belgium	No
Czech Republic	Government regulation of the setting of the trade price and waiver of the POZE fee
Denmark	No
Finland	VAT decrease for electricity, fuel price support for diesel locomotives
France	Propose the energy market access for railway companies without meters
Germany	We operate in many countries. Germany evolved a "Strompreisbremse", NL is discussing it, Switzerland's Energy prices are still low, Italy no special solution
Hungary	No
Italy	No
Luxembourg	Compensation for high prices
Norway	No
Portugal	Only for freight trains (diesel and electric). Fixed subsidy per kilometer.
Romania	Cost compensation and limitation
Slovakia	No
Slovenia	Support is provided for all companies. We do not differentiate by activities
Spain	No
Sweden	No
Switzerland	No
The Netherlands	No
UK	Rebate on commodity

How do you help train operators running in your country?

Good communication *Developed a CRM system*
Help them in getting all data correctly handled **Energy efficiency**

Daily info of traffic management
Energy management *Administrative tasks*
Support *Transparency regarding availability of documents*

Lowest possible energy prices
Reselling of the energy *Meter installation*
Quick administration *Follow up energy meters*

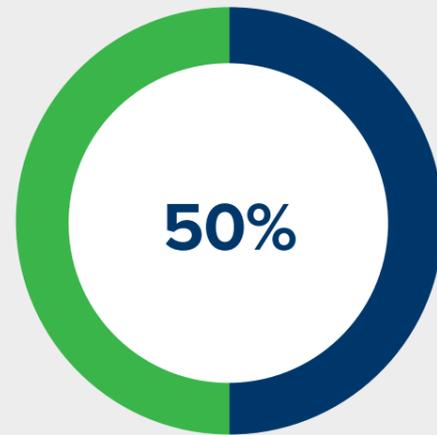
Access to all relevant energy data
Exchange energy data with other countries

Which measures have you taken to save energy? (Please just give us keywords)

Belgium	Continue and reinforce efficiency projects; decrease on-board temperature
Germany	Driver Assistance System, Modern Fleet of Locomotives
Portugal	Lightning, AC
Italy	Fleet renewal, energy efficiency of workshop
Switzerland	Modern Fleet, Driver Assistance System
Finland	Economic driving, analysis of energy data, reduction of stabling energy need, adjustments of temperature of passenger wagons, DAS system, co-operation with traffic control etc.
France	Global action plan: actions on buildings - ecostabling - ecodriving - rolling stock efficiency technical devices (aerodynamics, ecomodes,...)

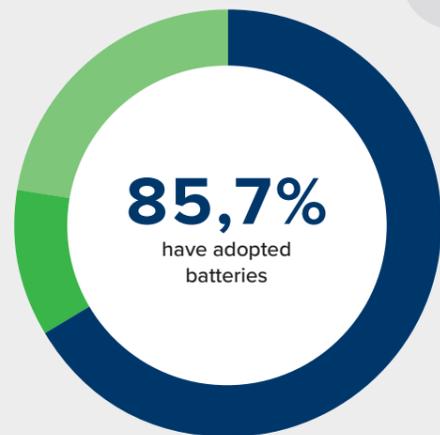
Do you think that the cooperation between IMs and RUs is strong enough regarding energy use?

■ Yes (50%)
■ No (50%)



What new technologies have been adopted in your country?

■ Batteries (85,7%)
■ Hydrogen (14,3%)
■ Other (28,6%)



Other:

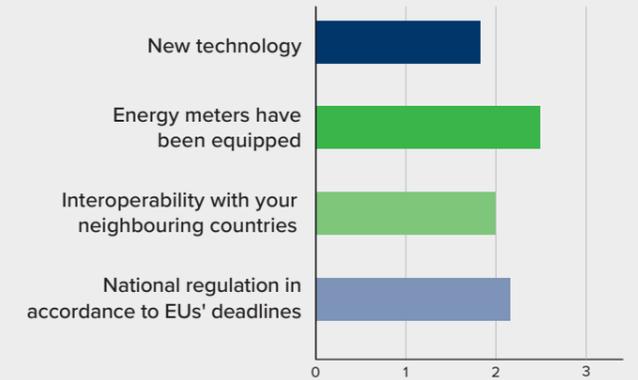
A hydrogen trains acquisition is started

Trimodal trains

Hybrid Loco in Germany

Biofuel, HVO

How do you see the development of the following railway energy fields in your country, during the last 3 years?

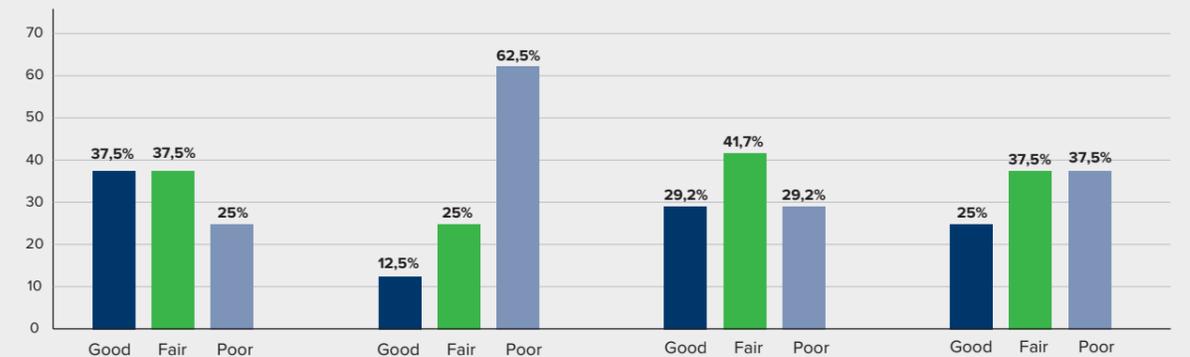


New technology

Energy meters have been equipped

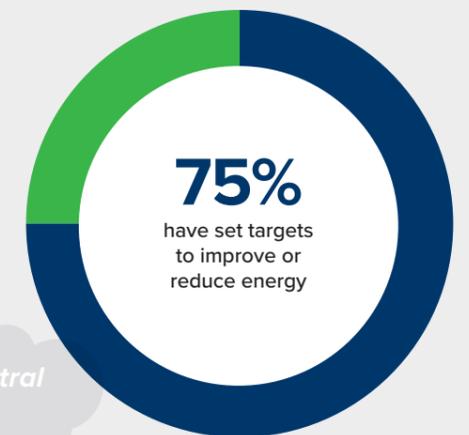
Interoperability with your neighbouring countries

National regulation in accordance to EUs' deadlines



Has your organization set any target to improve energy efficiency or to reduce CO₂ emissions?

■ Yes (75%)
■ No (25%)



CO₂ neutral by 2040

Climate neutral by 2030

Which energy efficiency targets has your organization set and which are the baselines and the deadlines?

Austria	Infrastructure Manager	Since 2018 electricity for trains is 100% renewable. Since 2019 electricity for operating facilities is also 100% renewable. Target until 2030: increase of ÖBB's own energy production from 60% to 80% (with partner power plants)."
Belgium	Train Operator	Decrease of 10% in traction energy consumption in 2028 compared to 2019
Belgium	Infrastructure Manager	We had a target for the previous winter: 20% to 25% on switch heating, buildings and workshops NOTE The reductions thanks to the automatic central control of switch heating, will also apply in future. Regarding CO2 emissions (according to performance contract with government): -10% in 2027 en -15% in 2032 (compared to 2019) and no CO ₂ -emissions in 2050
Finland	Train Operator	We have both environmental targets for 2025 and yearly target for energy efficiency of trains.
France	Train Operator	- 20 % in 2025 / 2015 (Wh/voy.km) - 10 % in 2024/2022
Germany	Train Operator	Efficiency targest differ between lines and are also different per traction mode (single/double traction) and also the train weight and length (which is often limited due to limitations on the corridor infrastructure). We introduced end of February a driver assistance tool in Germany (Switzerland already done), where we hope to save some percent energy. The tool is linked to the IM, where our train drivers are informed about the train type, speed and distance to the train ahead and the train behind.
Italy	Train Operator	With the UIC Railway Climate Declaration, in 2019, FS has updated its commitment and shares the goal of international railways to reduce rail transport specific final energy consumption by 30% in 2030 and by 50% in 2050, compared to 2005. Moreover, FS is committed to reach carbon neutrality by 2040, and reduce by 50% its Scope 1 and 2 emissions by 2030, respect to the baseline of 2019.
Luxembourg	Infrastructure Manager	Roadmap in development, we are currently defining realistic targets.
Norway	Infrastructure Manager	Consumption of infrastructure power per train kilometer < 2,7 kWh/train km Energy supply train power per gross tonne kilometer < 60 Wh/Gross tonne km
Portugal	Infrastructure Manager	We have set objectives for energy efficiency for buildings. The four year program aims to achieve up to 3% in electric energy savings.
Sweden	Infrastructure Manager	All supplied energy is bought with declaration of origin (Wind/Water/Sun)
Switzerland	Train Operator	Energy KPI in Wh/Btkm for each country and also quote of invoicing per energy meter (planned from year to year)
Switzerland	Infrastructure Manager	Climate neutrality until 2030
UK	Infrastructure Manager	An 18% reduction on 18-19 non-traction electricity & gas consumption by 2023-24





Partners

Switzerland
Finland
Belgium
Denmark
Sweden
Norway
The Netherlands
Spain
Luxembourg

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Photos: Archives CFL Design: Delphine Notarnicola, CFL