

IN-SET

BOLETÍN DE VIGILANCIA TECNOLÓGICA

TECHNOLOGICAL INTEGRATION AND ENERGY DIGITALIZATION

Resumen de la actualidad tecnológica en transición energética, que recoge tendencias en energías renovables, almacenamiento y materiales, combustibles sostenibles, procesos térmicos y de combustión, infraestructura eléctrica e inteligencia artificial, así como su aplicación en los distintos sectores de consumo.

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PREFACIO



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La transición energética no solo implica incorporar fuentes renovables o sustituir tecnologías basadas en combustibles fósiles; también requiere gestionar una infraestructura cada vez más distribuida, electrificada y compleja. En este contexto, la transformación digital se ha convertido en un habilitador estratégico, ya que permite convertir los datos generados por redes eléctricas, vehículos, sistemas de almacenamiento y procesos industriales en información útil para optimizar la operación, anticipar condiciones y fortalecer la resiliencia del sistema energético. Por ello, la integración tecnológica y la digitalización son hoy pilares fundamentales para el desarrollo del sector.

Esta edición del boletín In-SET muestra con bastante claridad que varias de las tecnologías que hace algunos años podían analizarse por separado hoy comienzan a converger. La electromovilidad, la inteligencia artificial, los gemelos digitales, los sistemas ciberfísicos y las plataformas de gestión avanzada se relacionan cada vez más entre sí. Un buen ejemplo es la carga de vehículos eléctricos: los modelos predictivos permiten anticipar patrones de uso y desplazarla a períodos más convenientes para la red. Esa misma capacidad de gestión abre la puerta a esquemas *vehicle-to-grid* (V2G), en los que el vehículo deja de ser únicamente una demanda adicional y puede transformarse, bajo ciertas condiciones, en un recurso flexible para el sistema eléctrico.

Hay dos aspectos de esta edición que resultan particularmente interesantes. El primero es el uso de **gemelos digitales para el control y la gestión de microrredes**. Su relevancia radica en que permiten representar virtualmente el comportamiento de un sistema energético y evaluar estrategias de operación antes de aplicarlas a la infraestructura real. Cuando esta capacidad se combina con inteligencia artificial, análisis de datos y detección de anomalías, se abre la posibilidad de contar con sistemas capaces no solo de monitorear lo que ocurre, sino también de anticipar situaciones y apoyar la toma de decisiones operativas.

El segundo es el proyecto australiano que busca ampliar el despliegue de la tecnología **V2G**. Más allá del proyecto específico, resulta interesante porque muestra cómo distintos avances pueden complementarse: una mayor penetración de vehículos eléctricos, infraestructura de carga inteligente, almacenamiento distribuido y plataformas digitales de gestión pueden, en conjunto, aportar flexibilidad a la red. En la misma dirección apuntan los desarrollos sobre la reutilización de baterías y la automatización de la recarga incluidos en esta edición.

Todo esto abre oportunidades para mejorar la operación de los sistemas energéticos y facilitar una mayor integración de energías renovables, pero también plantea desafíos concretos. La interoperabilidad entre tecnologías, la disponibilidad y la calidad de los datos, la ciberseguridad y la confiabilidad de los modelos de inteligencia artificial serán aspectos cada vez más relevantes a medida que estas soluciones pasen de pilotos y proyectos demostrativos a aplicaciones de mayor escala. Desde SET Chile, y particularmente desde la línea de Integración Tecnológica e Inteligencia Artificial, existe una clara oportunidad de contribuir a este proceso, articulando capacidades de investigación, desarrollo y validación tecnológica con las necesidades reales de la industria y del sector energético.

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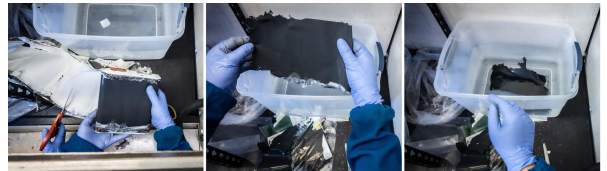
NOTICIAS

Edición n°2 | julio de 2026 | set.usm.cl

Spent EV batteries get second life as higher-performance battery material

Etiqueta: Charging load management | Publicada el 01/07/2026

A new approach to battery recycling could turn today's electric vehicle waste into the building blocks of tomorrow's higher-performing batteries. Engineers at the University of California San Diego have developed an environmentally friendly method to upcycle cathodes from used lithium iron phosphate (LFP) batteries into a more powerful battery material known as lithium manganese iron phosphate (LMFP), which can store more energy than LFP.



[ver más...](#)

Batteries and fuel cells would overhaul emissions from semis and other heavy vehicles

Etiqueta: Charging load management | Publicada el 25/06/2026

Although electrified versions of vans, buses and semis cost more upfront on average than their diesel-powered counterparts, the overall calculus behind adopting greener vehicles is currently in flux.



[ver más...](#)

WeaveGrid and CPS Energy Launch EV Smart Rewards Program to Support Grid Reliability and Help Customers Save

Etiqueta: Advanced metering infrastructure (AMI) | Publicada el 24/06/2026

WeaveGrid, a grid-edge energy management software provider for electric utilities, and CPS Energy, the nation's largest community-owned provider of electric and gas services, today announced the launch of the EV Smart Rewards Program, leveraging WeaveGrid's Distribution-Integrated System Capacity Orchestration (DISCO) platform to help customers save while supporting grid reliability.

[ver más...](#)

Electric trucks closer to tipping point than many realize and cities can lead the way

Etiqueta: AI for grid operation | Publicada el 24/06/2026

Cities hold the key to accelerating the transition to electric freight and boosting energy security, new analysis from C40 Cities, University of Exeter and Arup reveals.

[ver más...](#)

How digital participation can aid the energy transition

Etiqueta: AI for grid operation | Publicada el 23/06/2026

The active involvement of citizens, stakeholders and municipalities is essential for the success of the energy transition. Digital participation platforms promise broader access to planning processes. However, a new study, published in Renewable and Sustainable Energy Reviews, calls for a fundamental shift in how digital participation is implemented, arguing that it should be conceived as a comprehensive infrastructure supporting the entire planning process, rather than simply a collection of communication tools.

[ver más...](#)

PUBLICACIONES CIENTÍFICAS

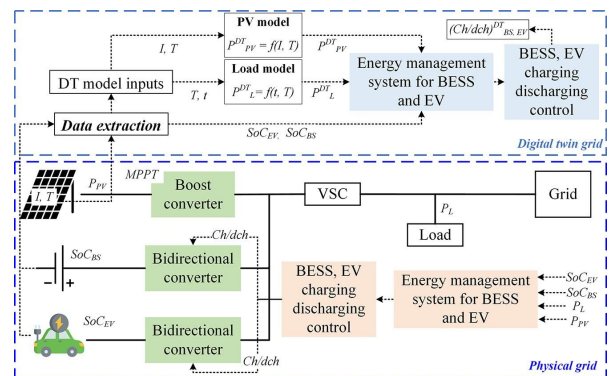
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Digital twin based microgrid control and energy management: Trends, challenges, and future directions

Etiqueta: Digital twins | Publicada el 21/06/2026

This work reviews DT-driven control and EM for microgrids, synthesizes current advances, and outlines key research directions. It further proposes a conceptual DT framework and presents a MATLAB/Simulink-based simulation variant to demonstrate feasibility. The results underscore DT's promise for enhancing control and EM in renewable-dominated microgrids while highlighting the need for system-level, standards-aligned development.

[ver más...](#)

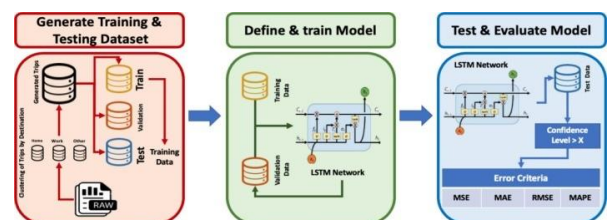


Electric vehicle charging management through LSTM-based prediction of non-critical charging sessions

Etiqueta: Electric vehicles | Publicada el 21/06/2026

This study develops a deep learning model that helps drivers skip or shift these non-critical sessions to cleaner hours without changing travel routines. We train a Long Short-Term Memory (LSTM) network using second-by-second data from 64 BEVs. The model forecasts travel needs for the next two days and identifies non-critical charging sessions. It then shifts those sessions to lower-emission hours.

[ver más...](#)

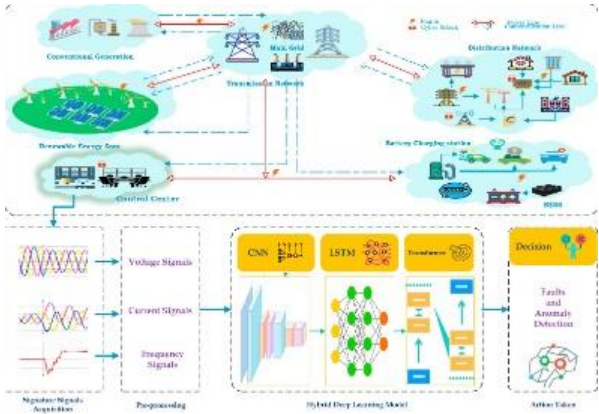


Intelligent Fault and Cyber Intrusion Detection Framework for Cyber Physical Systems

Etiqueta: Anomaly detection systems | Publicada el 21/06/2026

This paper presents an intelligent framework for detection of faults and cybersecurity enhancement in EV to Smart Grid systems. This paper proposes an AI-based hybrid framework joining Convolutional Neural Networks (CNNs), Long Short-Term Memory (LSTM) models, and attention mechanisms of Transformer for real-time fault and cyber-anomaly detection.

[ver más...](#)

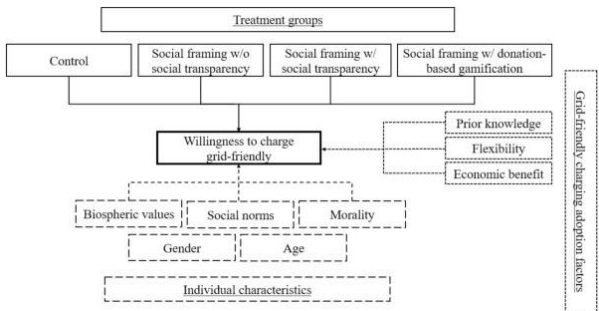


Nudging grid-friendly electric vehicle charging: Different shades of social framing and the power of individual factors

Etiqueta: Charging load management | Publicada el 21/06/2026

This study assesses the effect of nudging interventions – social framing with or without social transparency of own behavior and with donation-based gamification – on EV drivers' willingness to charge during grid-friendly times. The online vignette experiment conducted with 1178 EV drivers in Norway reveals that social framing, whether combined with social transparency of individual contributions or with donation-based gamification, fails to increase the likelihood of grid-friendly charging.

[ver más...](#)

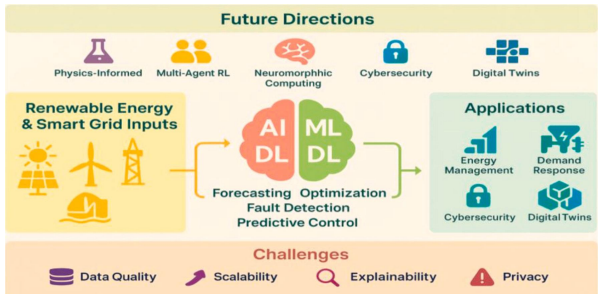


AI-driven control and optimization for renewable energy integration in smart grids

Etiqueta: Electrical asset management systems | Publicada el 21/05/2026

The review also goes into their roles in optimizing energy storage, developing digital twins, and enhancing cybersecurity. The discussion extends to multi-objective optimization frameworks that balance cost, resilience, and sustainability, and includes a life cycle assessment of these AI-driven solutions. Quantum computing, reinforcement learning, neuromorphic systems, and hydrogen economies enabled by AI are pointed out as promising frontiers.

[ver más...](#)



PATENTES

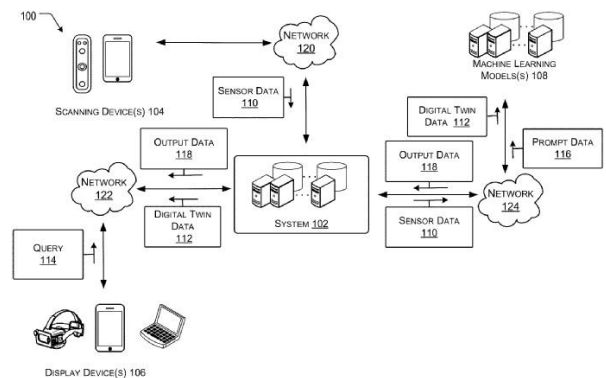
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Methods and system for facilitating user interactions with a digital twin of a physical environment

Etiqueta: AI-based forecasting systems | Publicada el 04/06/2026

The present disclosure provides methods and systems for facilitating user interactions with a digital twin of a physical environment. The system receives sensor data and generates a three-dimensional model of the physical environment. The system generates text-based descriptors of the physical environment and objects based on the three-dimensional model.

[ver más...](#)

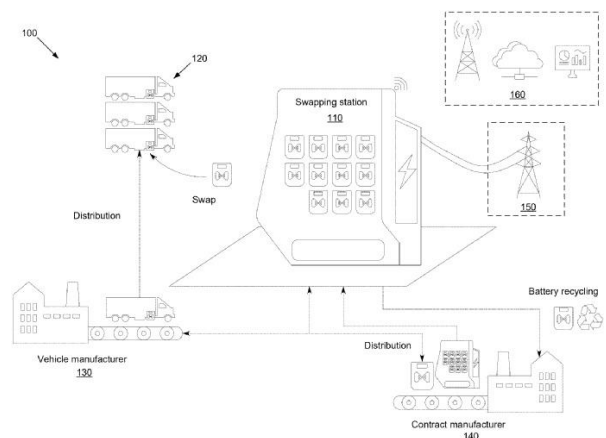


Methods and systems for end-to-end infrastructure for supporting use of swappable batteries in electric vehicles

Etiqueta: Infrastructure connectivity | Publicada el 04/06/2026

Systems and methods are provided for end-to-end infrastructure for supporting use of swappable batteries in electric vehicles. An end-to-end infrastructure for supporting use of electric vehicles may include one or more battery-swapping fueling stations.

[ver más...](#)

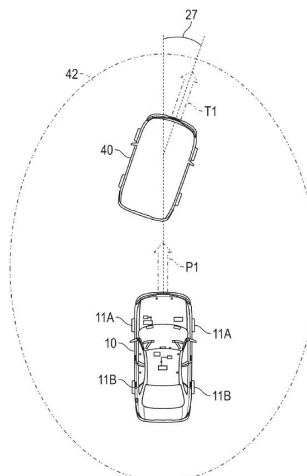


Dynamic adjustment of a vehicle contact sensor sensing threshold

Etiqueta: Electric vehicles | Publicada el 28/05/2026

A method for dynamically adjusting a sensing threshold of a vehicle contact sensor of a force management system of a vehicle includes detecting an object external to the vehicle via one or more vehicle environment sensors and then determining, based at least partially on data from the one or more vehicle environment sensors, a current path of the vehicle, a current trajectory of the object, and whether the current path of the vehicle and the current trajectory of the object intersect.

[ver más...](#)

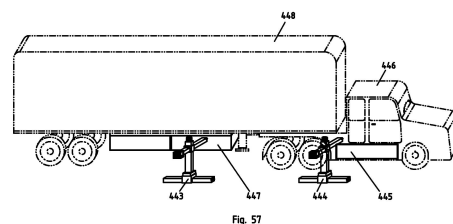


Method for efficient electric vehicle battery recharge by automatic recharge station

Etiqueta: Charging load management | Publicada el 07/05/2026

An automated method is disclosed for recharging Efficient Electric Vehicles (EEVs) without manual intervention. The system identifies the vehicle's presence and determines the position of a recharge inlet - whether single or multiple - using sensors and control algorithms. A robot charger aligns and connects the vehicle to a recharge station, establishing an electrical connection securely and efficiently.

[ver más...](#)

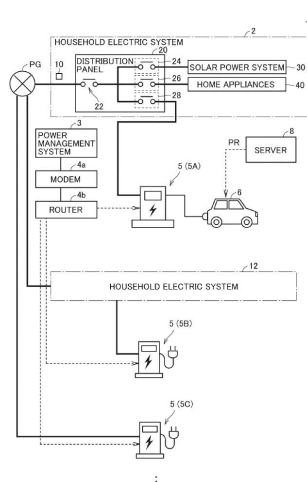


Power system, and electric-powered vehicle

Etiqueta: Electric vehicles | Publicada el 30/04/2026

A power system includes power equipment and an electric-powered vehicle. The power equipment includes a powering unit and a storage unit. The powering unit powers a power grid in each of a first period and a second period. The storage unit stores grid code information. The electric-powered vehicle includes a storage device and a control device.

[ver más...](#)



PROYECTOS

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Digitizing Utilities Prize Round 3: Resilient Grid Innovation

Etiqueta: Cyber-physical energy systems | Publicada el 03/06/2026

Following a successful Round 1 and Round 2 of this prize series, the U.S. Department of Energy's (DOE's) Office of Electricity is excited to announce the \$2.4 million Digitizing Utilities Prize Round 3: Resilient Grid Innovation. Round 3 of this competition aims to incentivize technology development partnerships with interdisciplinary teams of software developers and data experts to transform digital systems, data analytics, and grid resource integration for the electric sector.

[ver más...](#)



ARENA expands Amber project to accelerate vehicle-to-grid rollout in Australia

Etiqueta: Electromobility | Publicada el 28/05/2026

The Australian Renewable Energy Agency (ARENA) is boosting its support for Amber Electric to help take vehicle-to-grid (V2G) technology to the next stage in Australia. ARENA is providing an additional \$13.6 million in funding to expand Amber's EV charging project, bringing total funding to \$16... The post ARENA expands Amber project to accelerate vehicle-to-grid rollout in Australia appeared first on Australian Renewable Energy Agency.

[ver más...](#)



MERCADO

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Stay Connected: EV Monthly Recharge, June 2026

Etiqueta: Charging load management | Publicada el 22/06/2026

Global electric vehicle sales (BEV, PHEV and fuel cell) reached 7.5 million units through May 2026, up 3 percent year-over-year. China holds 51 percent of global EV market share.



[ver más...](#)

Digital Transformation in the Renewable Energy Sector – 2026 Overview

Etiqueta: Electrical asset management systems | Publicada el 19/06/2026

Renewable energy production is skyrocketing, but the management systems supporting it often lag behind. Grids are more complex, electricity demand is rising, and balancing supply with demand is becoming more challenging. Digitization helps companies improve energy efficiency, predict demand, and reduce waste while maintaining grid stability.

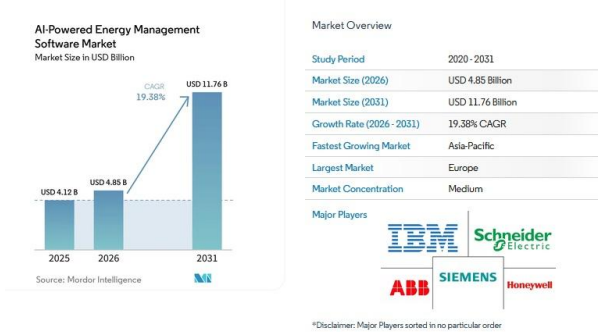


[ver más...](#)

AI-powered Energy Management Software Market Size & Share Analysis

Etiqueta: Machine learning | Publicada el 14/06/2026

The AI-powered Energy Management Software Market size is expected to grow from USD 4.12 billion in 2025 to USD 4.85 billion in 2026 and is forecast to reach USD 11.76 billion by 2031 at 19.38% CAGR over 2026-2031. Growth in the AI-powered Energy Management Software Market is being shaped by stricter energy disclosure rules, more volatile grid conditions, and broader use of AI in daily operations across buildings, utilities, and industrial sites.

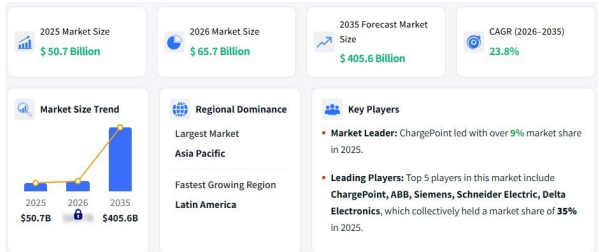


[ver más...](#)

Electric Vehicle Charging Station Market Size & Share 2026-2035

Etiqueta: Charging load management | Publicada el 01/06/2026

The global electric vehicle charging station market was valued at USD 50.7 billion in 2025, reflecting the cumulative impact of accelerating EV fleet growth, large-scale public investment programs, and a structural decline in charging hardware costs across both AC and DC segments [1]. The market is projected to expand from USD 65.7 billion in 2026 to USD 405.6 billion by 2035, representing a compound annual growth rate (CAGR) of 22.4% over the forecast period, according to the latest report published by Global Market Insights Inc.

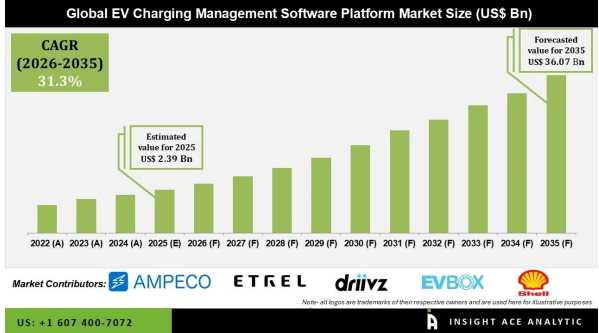


[ver más...](#)

EV Charging Management Software Platform Market Current Trends Analysis 2026 to 2035

Etiqueta: AI-based forecasting systems | Publicada el 01/05/2026

EV Charging Management Software Platform Market Size is valued at USD 2.39 Bn in 2025 and is predicted to reach USD 36.07 Bn by the year 2035 at a 31.3% CAGR during the forecast period for 2026 to 2035.



[ver más...](#)

EVENTOS

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Euro EV Show

Etiqueta: Electric vehicles | Publicada el 02/06/2026

The Euro EV Show, taking place on 10-11 September 2026 at La Nave, Madrid, is built around that need. It brings together the people evaluating technologies, planning new projects and looking for partners across vehicles, batteries, charging, software, mobility and energy. Companies attend to understand where the market is heading and to identify the organisations with which they want to work.



[ver más...](#)

Festival of eMobility

Etiqueta: Electromobility | Publicada el 01/06/2026

The Festival of eMobility. Mark your calendars for September 1st to 3rd, 2026, as Berlin Templehof becomes the convergence point for global eMobility leaders. Experience three transformative days where the entire ecosystem unites to accelerate mass EV adoption.



[ver más...](#)

REPORTES

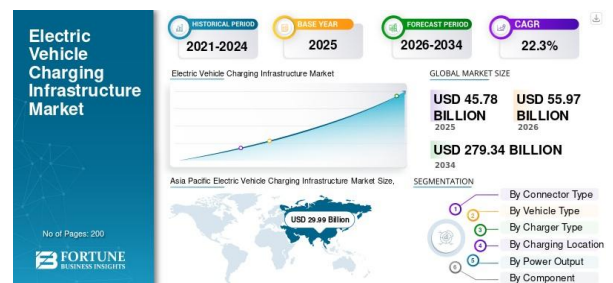
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Electric Vehicle Charging Infrastructure Market Size, Share & Industry Analysis

Etiqueta: Electric vehicles | Publicada el 22/06/2026

The electric vehicle charging infrastructure market size was valued at USD 45.78 billion in 2025. The market is projected to grow from USD 55.97 billion in 2026 to USD 279.34 billion by 2034, exhibiting a CAGR of 22.3% during the forecast period. Asia Pacific dominated the electric vehicle charging infrastructure market with a market share of 65.51% in 2025.

[ver más...](#)

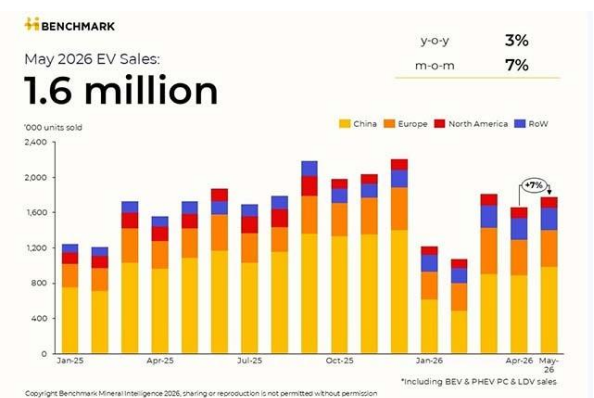


Global EV Sales Reach 1.8 Million Units in May 2026 as Europe Drives Growth

Etiqueta: Electric vehicles | Publicada el 16/06/2026

The global electric vehicle market recorded another strong month in May 2026, with worldwide EV sales reaching 1.8 million units. According to Benchmark Mineral Intelligence, year-to-date EV sales have now climbed to 7.5 million vehicles, highlighting the continued transition toward electrified transportation despite significant differences in regional market performance. Compared with May 2025, global EV sales increased by 3%, while monthly volumes rose 7% compared with April 2026.

[ver más...](#)



NORMATIVAS

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EAFO News Flash – June 2026

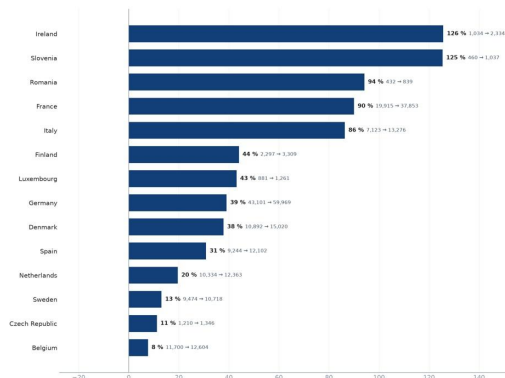
Etiqueta: Infrastructure connectivity | Publicada el 17/06/2026

The European Alternative Fuels Observatory (EAFO) has updated its latest preliminary data covering the registration of 14 of the 27 EU Member States in May 2026. Battery-electric vehicle (BEV) registrations reached 184,031, up 27.9% compared with May 2025, while BEVs represented 23.1% of new registrations. Publicly accessible recharging infrastructure reached 1,155,861 points, an increase of 19.1% compared with May 2025.

[ver más...](#)

YoY BEV registration change by country

May 2026 compared with May 2025



EAFO, 14 countries, category BEV, drivetrain BEV, reporting period May 2026 vs May 2025.

NERC's CIP Roadmap and the Future of Grid Cybersecurity

Etiqueta: Cyber-physical energy systems | Publicada el 11/05/2026

NERC's new CIP Roadmap signals a major shift in how cyber risk will be regulated across the power grid. This Policy Pulse explains what NERC released, why it matters, what standards and guidance are coming next, and how utilities, generators, and grid operators should prepare for expanding CIP scope and enforcement.

[ver más...](#)

