Gas Infrastructure Europe

Press Release

Hydrogen: the missing link in Europe's energy system efficiency

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A new study launched today by Gas Infrastructure Europe (GIE) finds that Europe cannot deliver a secure, affordable, and climate-neutral system without coordinated planning across electricity, hydrogen and gas infrastructure.

Presented at GIE's workshop *"Unlocking Energy System Efficiency: The Strategic Role of Hydrogen Infrastructure in Sector Coupling,"* the study highlights the critical role of hydrogen in enabling a cost-efficient and resilient energy transition.

Developed in collaboration with **Forschungsstelle für Energiewirtschaft (FfE), Consentec,** and **ConGas**, the study combines advanced modelling of energy systems and infrastructure to assess how different energy carriers can work together more effectively.

Its central finding is clear: a siloed, electricity-only approach risks driving unnecessary costs and system instability. By contrast, a coordinated, multi-carrier strategy significantly improves overall system efficiency and resilience.

Hydrogen infrastructure emerges as a key enabler of sector coupling. It provides flexibility to the power system by absorbing excess renewable electricity, reducing curtailment, and alleviating grid congestion. The analysis shows that a stronger hydrogen system could reduce the need for electricity side flexibility solutions, such as batteries, by around 30% by 2050, while enhancing overall system stability.

The study also highlights hydrogen's essential role in decarbonising energy-intensive industries, where direct electrification is often not viable. Access to competitively produced hydrogen, supported by cross-border transport networks, diversified import routes and large-scale storage, can help safeguard Europe's industrial competitiveness while preventing carbon leakage.

Importantly, the study shows that hydrogen can also help relieve pressure on electricity grids by shifting part of the energy transport from electrons to molecules. This reduces congestion and limits the need for costly grid reinforcements, while maintaining system reliability during periods of low renewable generation.

Despite its strategic importance, hydrogen infrastructure represents only a small share of total system costs. Investments in electricity and hydrogen networks account for less than 4% of total costs, yet deliver substantial value for system flexibility and security of supply.

Ralph Bahke, GIE Hydrogen Area Sponsor and Managing Director of ONTRAS Gastransport GmbH, highlights: *"To unlock these benefits, the study calls for a stronger EU-level framework for infrastructure planning, including closer coordination between system operators, targeted de-risking mechanisms, and streamlined permitting procedures, ensuring hydrogen can scale at the pace required for Europe's energy transition"*.

Who is GIE

Gas Infrastructure Europe

Gas Infrastructure Europe **(GIE)** is the association representing the interests of European gas infrastructure operators active in gas transmission, gas storage and Liquefied Natural Gas (LNG) regasification. GIE is a trusted partner of European institutions, regulatory bodies and industry stakeholders. It is based in Brussels, the heart of European policymaking. GIE currently represents 72 member companies from 25 countries. GIE's vision is that by 2050, the gas infrastructure will be the backbone of the new innovative energy system, allowing European citizens to benefit from a secure, efficient and sustainable energy supply.

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