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## **Superconductivity: A game-changer for the future of rail transport**

(Paris, 11 December 2024) Today, the International Union of Railways (UIC), in partnership with SNCF Réseau, hosted a landmark conference at the UIC headquarters in Paris, showcasing superconductivity as a revolutionary technology for the rail industry. This event, attended by global experts, industry leaders, and academic innovators, reinforced UIC's pivotal role as a catalyst for technological development in the railway sector.

Superconductivity, once confined to research laboratories, is now driving industrial applications with immense potential to reshape rail networks. By integrating superconducting cables and fault current limiters, the rail industry can achieve unprecedented levels of efficiency, capacity, and sustainability, aligning with global goals for decarbonisation and engendering an energy transition.

### **UIC: Driving innovation for a sustainable future**

As the voice of railways around the world, UIC is at the forefront of innovation across the industry by fostering cooperation and partnerships. This conference exemplifies UIC's mission to provide a platform for discussion between key stakeholders (academic institutions, industry leaders, and policymakers) and to accelerate the adoption of transformative technologies.

*"UIC is not only a unifying force for the rail community but also a centre for innovation. By bringing together the brightest minds and the most forward-thinking organisations, we unlock the potential of groundbreaking technologies like superconductivity. This workshop exemplifies our commitment to enabling a greener, smarter, and more resilient rail industry."* François Davenne, Director General of UIC, emphasised.

### **Key topic from the conference**

1. **Innovation as the backbone of railway development:** SNCF Réseau is spearheading the integration of superconductivity to modernise infrastructure and boost network reliability.
2. **Superconductivity - enabling fossil-free mobility:** The declining availability of fossil fuels highlights the need for sustainable alternatives, with rail positioned as the backbone of green mobility.
3. **Sustainability and performance go hand in hand:** Superconducting technologies offer a unique opportunity to combine efficiency, environmental responsibility, and economic viability.

4. **Cooperation for a global impact:** The conference emphasised the importance of international partnerships to fast-track innovation for its adoption across the rail sector and beyond.

### **Industry leaders share their vision**

*"Superconductivity opens up a new frontier for railway infrastructure. It enhances network performance, supports sustainability goals, and helps us to build a rail system which is ready for the future."* Thomas Joindot, Technical Director at SNCF Réseau, stated.

*"The energy transition demands bold technological solutions, and superconductivity is one of them. Nexans is excited to contribute to this revolutionary progress, in partnership with the rail industry, to pave the way for a sustainable and electrified future."* Jérôme Fournier, Vice President of Innovation at Nexans, remarked.

### **Showcasing technological breakthroughs**

The conference featured pioneering projects, such as SuperRail, which is co-funded by the French government under the France 2030 programme, which demonstrates how superconducting cables can enhance power availability and reduce costs. The agenda also included improvements in fault current limiters, magnetic levitation technology, and next-generation superconducting materials, showcasing the technology's broad applicability.

The event experience was also enhanced by contributions from industry leaders such as Nexans, Grenoble-INP, the University of Lorraine, Absolut System, the Japanese Railway Technical Research Institute (RTRI), and the University of Tokyo. These collaborations highlighted the versatility of superconductivity, not only for the rail industry, but also for sectors such as energy grids, aerospace, and for industrial applications.

### **Superconductivity: A vision for the future**

Looking ahead, UIC is committed to promoting superconductivity and other innovative solutions as part of its broader strategy to support the global rail community. This conference underscored the organisation's dedication to connecting stakeholders, sharing expertise, and driving practical applications of advanced technologies.

UIC would also like to take this opportunity to thank its partners NEXANS, Absolut System, CentraleSupélec, and the University of Lorraine, without whom France would not hold its leading position on this topic. Additionally, UIC wishes to extend its gratitude to its media partners, the Railway Gazette, Ville Rail et Transport, La Revue Générale des Chemins de Fer, BtoB Rail, and Via Libre.

A film on supraconductivity is available here: <https://youtu.be/oxqW8t-AyYA>

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## ABOUT

### UIC

UIC is the worldwide organisation for the promotion of rail transport at a global level and for the collaborative development of the railway system. It brings together more than 200 members across all 5 continents, and includes rail operators, infrastructure managers, railway service providers, and more. UIC maintains close links with all stakeholders in the rail transport sector around the world, including manufacturers, railway associations, and public authorities, as well as with other domains and sectors whose experiences may be beneficial to rail development. UIC's main missions include understanding the business needs of the rail community, developing innovative programmes to identify solutions to these needs, and preparing and publishing documents such as reports, specifications and guidelines that facilitate the implementation of innovative railway solutions. [www.uic.org](http://www.uic.org)

### SNCF Réseau

To meet the growing demand for mobility and support the development of rail transport for an environmentally friendly transition, SNCF Réseau enhances service offerings for freight and passenger transport across the 28,000 kilometres of railway lines it maintains, modernises, and ensures the safety of. As a network manager, SNCF Réseau guarantees neutral and equitable access to infrastructure and works in partnership with public authorities, regions, and railway companies. Customer satisfaction is the company's top priority. A subsidiary of the SNCF Group, SNCF Réseau employs over 50,000 people and achieved a turnover of nearly €7.6 billion in 2023. [www.sncf-reseau.com](http://www.sncf-reseau.com)