

SEKISUI KYDEX

Designing for Sustainable Disruption



Sustainable rail travel is becoming increasingly vital as the world's expectations shift towards environmental responsibility.

Designers, original equipment manufacturers (OEMs) and material manufacturers are coming together to help guide the industry with real-world collaborative applications like the Nordstern seating concept.

Shortly after the April 2023 RedCabin Railway Interiors Innovation Summit, Grammer AG, N+P Innovation Design, Lantal Textiles AG and SEKISUI KYDEX began collaborating on the groundbreaking Nordstern seating system, which won the RedCabin Rail Interiors Award in the 'Design Innovation of the Year' category.

Sustainability was a crucial component in the material selection process, with both suppliers bringing sustainable solutions to N+P's innovative design.

"Partner selection was a large part of creating a holistic solution. We believed the right partners could make a significant difference in bringing the design to life," stated Christiane Bausback, Managing Director for N+P Innovation Design. The Nordstern seating concept incorporates Lantal seating fabrics and KYDEX® Thermoplastics.

Lantal's 100% polyester MESH seat covers promote sustainability with easy recyclability and low maintenance, while enhancing passenger comfort. *According to Stefan Wilhelm, Lantal's Head of Markets Ground, "The fibre composition of Lantal's new MESH seat covers provide excellent moisture absorption and breathability to enhance the passenger experience while offering the highest possible durability. With significant weight savings and a 100% recyclable material, the MESH seat covers contribute to the sustainable development requirement from Grammer and N+P."* Lantal's MESH seat covers provide the design freedom required and deliver the comfort the passenger deserves.

The overall passenger experience is enhanced through technology with Nordstern's real-time personalised trip connectivity, offering a cutting-edge interface with a customer-centric experience. The system enables passengers to check in, adjust seats, select entertainment options and receive travel updates – all from the comfort of their seat. In addition, Grammer seamlessly integrated inductive charging by using 100% recyclable KYDEX® with Infused Imaging™ technology. A woodgrain pattern is featured on the tiered tray tables and the console design – complete with a wireless charging symbol.

Timo Bauer, Grammer's Vice President of PMS Rail & Road, stated, "When we step onto a high-speed train, we all hope for a warm and inviting atmosphere. The Nordstern interior experience, based on Grammer's modular magnesium seat structure and our partnership with N+P, Lantal and SEKISUI KYDEX, offers a range of seat configurations, delivering increased comfort, privacy and safety – all within the same space as traditional cabins. These seats are designed to make public transportation more appealing, offering a unique and adaptable journey."

Within six months, the four partners developed and unveiled the design prototype, showcasing its sustainably minded and customer-centric design at the November 2023 RedCabin Railway Interiors Innovation Summit in Vienna. *Ruben Bake, Mass Transit Business Manager for SEKISUI KYDEX, noted, "Sustainable design is sometimes challenging for organisations to understand, so we were delighted to engage our designLab® and appLab™ Innovation Centers with an environmentally responsible project."*

Nordstern's adaptable seating concept transforms train interiors into welcoming, modern and environmentally friendly spaces while setting the standard for sustainable rail interior design. Yet, to design with sustainability in mind, it is essential to consider the quality of a product as well as the environmental impact of the development process, which can ultimately overshadow a product's benefits.

SEKISUI KYDEX and their KYDEX® and ALLEN® Thermoplastics portfolios, including the Infused Imaging™ technology, contribute to sustainable material selection through their energy-saving potential, intrinsic recyclability and energy recovery options. Working towards a closed-loop supply chain that maximises the amount of end-of-life material

received from customers, their in-house recycling facility is recycling over 15 million pounds (about 6,803,880kg) of thermoplastic annually. While their products are recyclable, the infrastructure to collect, sort and manage their recyclability is still new and in development within the rail industry. SEKISUI KYDEX is focused on developing new partnerships and collaborations within and beyond the rail community to find solutions.

In 2023, SEKISUI KYDEX began a multi-phased approach to better understand their environmental impact by conducting a life-cycle assessment (LCA) of its Bloomsburg, PA, KYDEX® Thermoplastics manufacturing facilities. This standard quantifies the effects associated with all stages of a product's life cycle, allowing new analysis of the product's environmental impact, beginning with raw materials entering the manufacturing facilities until the product leaves the facility, also known as cradle-to-gate.

The collaboration between Grammer, N+P, Lantal and SEKISUI KYDEX is a testament to the industry's commitment to decarbonisation. In this vision of modern train travel, passengers can enjoy an unparalleled combination of comfort, technology and sustainability without compromising design. Organisations that align with this mission can offer an eco-friendly product design and foster sustainable innovations. However, achieving substantial change requires an industry-wide initiative. The rail interiors sector faces unique challenges due to regulations, a lack of expertise and limited collaboration within the supply chain.

With early collaboration and sharing of information, knowledge and best practices, everyone can contribute to a circular and sustainable rail industry, aligning with the growing demand for environmentally responsible travel.

Click [here](#) to watch our video.

For more information visit www.kydex.com



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