

SPEEDING TRANSIT INTO A NEW ERA: THE JOURNEY OF THE NEXT IDEENZUG URBAN

A collaboration with neomind and SEKISUI KYDEX



In transportation interiors, the passenger experience is influenced not only by seat design, layout, and lighting, but also by the materials and creative choices behind them. As passengers seek more personalized, sustainable, and connected journeys, designers require tools and partnerships that enable them to create without compromise. Partnerships focused on the end result and bringing complex visions to life with speed, flexibility, and intention.

neomind, a German design consultancy, and SEKISUI KYDEX formed such a partnership within an industry where traditional processes are often slow to change, demonstrating how collaboration can drive design innovation.

This isn't just another rail story; it's a story of innovation, and what's possible when constraints are removed, prototyping is accelerated, and material suppliers are treated as creative partners.



LAYING THE TRACKS: FROM CONCEPT TO COLLABORATION

The origins of this partnership can be traced back to the RedCabin Rail Summit in 2021, where an initial conversation between Matthias Fischer, Managing Director of neomind, and Karyn McAlphin, Creative Design Lead of SEKISUI KYDEX, led to an exchange of ideas and a desire to work together. As the relationship

between the two companies evolved, discussions ultimately extended to the CMF (Color, Material, Finish) signature of Hamburg's IdeenzugUrban (Ideas TrainUrban) S-Bahn concept – a new take on what rail interiors could look like.

A NEW APPROACH TO RAIL INTERIORS

In 2023, neomind enlisted SEKISUI KYDEX to provide material for Hamburg's IdeenzugUrban S-Bahn concept, scheduled to debut at the UITP exhibition in Hamburg in 2025. Matthias Fischer emphasized that the IdeenzugUrban was not a standard project tied to a specific fleet order. Rather, the project was intended to break the mold of how traditional decision makers or engineers write in specs by familiarizing and showcasing new ideas, thereby inspiring stakeholders to consider alternative solutions.

Hamburg's IdeenzugUrban S-Bahn concept went beyond simply selecting surface finishes. It explored how materials can support design, challenge traditional approaches, and help accelerate concepts into tangible realities. As Fischer explained, "One of the key drivers was finding a robust, long-lasting, and lightweight material solution, which was why we engaged with SEKISUI KYDEX. Weight reduction played a significant role while also enabling new designs that could replace traditional materials."

The design was both functional and aesthetic, featuring:

A modern woodgrain pattern complete with embedded wireless charging symbols, providing the convenience of modern technology to riders.

Decorative imagery and the inclusion of bespoke logos, while bringing varying cabin configurations to enhance the passenger experience.

DISRUPTION THROUGH SUSTAINABLE INNOVATIONS

Sustainability was a significant factor as decision-makers often default to materials they already know, which can limit innovation. As Fischer noted, the IdeenzugUrban aims to inspire engineers and specifiers early in the process, encouraging them to consider new, more sustainable solutions when writing requirements for new fleets.

To achieve the high standards required for Hamburg's IdeenzugUrban S-Bahn concept, the teams opted for KYDEX® 2210LT, a European rail-grade thermoplastic valued for its formability and recyclability. The use of Infused Imaging™ Technology, a proprietary process that embeds

imagery into KYDEX® Thermoplastics, enabled seamless integration of finishes that traditional materials, such as HPL (High-Pressure Laminate), cannot easily match in terms of flexibility and durability – an important factor in demanding environments of modern rail travel.

According to Fischer, “innovative processes must be included in tenders to move into full-scale adoption, thereby benefiting the lifecycle of the programs. We must invest in the beginning to gain later on, while still demonstrating the long-term value of durable, sustainable materials.”



PROTOTYPING AT THE SPEED OF DESIGN

The goal?

To streamline the production process by eliminating the need for secondary steps, such as post-applied decals or painting. Instead, logos, symbols, and intricate patterns were directly integrated into the material itself, significantly enhancing durability and efficiency in production and ultimately eliminating chipping and peeling in use.

The project involved 24 parts in five sizes all produced from a single KYDEX® thermoplastic sheet. The SEKISUI KYDEX appLab™ team created a layout at a 45-degree angle to fit the longest panel across the sheet, maximizing material efficiency and minimizing waste. Becky Gallup, CMF Design Manager for SEKISUI KYDEX, stated, “Critical alignment of the logo across the woodgrain was the biggest challenge. By creating trim marks and aligning

them with the Infused Imaging™ artwork, the appLab™ team ensured exact alignment across all panels.”

What typically spans several months was accomplished in a matter of weeks, to meet the timeline for the UITP show:

- Becky Gallup, CMF Design Manager for SEKISUI KYDEX, achieved color and surface matching by matching Infused Imaging™ panels with laminated woodgrain and HPL used elsewhere on the IdeenzugUrban S-Bahn.
- High-precision CNC routing was used to produce a variety of intricate parts by the SEKISUI KYDEX appLab™.
- The final components were meticulously produced, rigorously reviewed, and promptly delivered, all within an unprecedented timeframe.

DESIGN OUTCOMES WITH LASTING IMPACT

Hamburg's IdeenzugUrban S-Bahn concept resulted in several noteworthy outcomes that showcase its innovative spirit:



MATERIAL CONSOLIDATION:

The teams were able to streamline the complexity of component design by using non-traditional materials. These materials enhance functionality and reduce the number of parts needed, leading to a more efficient production process.



SUSTAINABILITY COMMITMENT:

The project embraces an eco-friendly approach using materials that not only meet the rail industry's strict requirements but are also 100% recyclable, like KYDEX® 2210LT, supporting Hamburg's IdeenzugUrban S-Bahn concept's long-term sustainability goals.



DESIGN AESTHETICS:

The team integrated custom woodgrain patterns and branding elements into a single layer, creating a visually appealing product that contributes to a more functional end user experience providing a warm haptic structure and a cleaner look that will last longer than traditional materials would.



RAPID DEVELOPMENT:

The project's timeline was ambitious; the teams moved from initial renderings to tangible samples and ultimately to showpieces in weeks. This rapid development cycle demonstrates a commitment to agility and responsiveness that can be applied to end users' design processes.

As Ruben Bake, Mass Transit Market Business Manager at SEKISUI KYDEX, explained: "Hamburg's IdeenzugUrban S-Bahn concept was about removing barriers – from design intent to execution. It's not just the product; it's the process and the dedicated teams behind it that truly drive this kind of innovation." Bake also highlighted the importance of early collaboration and effective communication as essential functions for bringing groundbreaking ideas to life.



WHAT IT MEANS FOR RAIL DESIGNERS

Hamburg's IdeenzugUrban S-Bahn is more than a concept; it's a representation of a transformative vision in design and manufacturing, a testament to what can be achieved when the right material partners are involved. It shows how creative teams can work together to shorten timelines while still achieving ambitious design goals. From the intricacies that redefine comfort to the elegantly designed tabletops that merge functionality with aesthetic appeal, every element is a result of the collaborative effort. This harmonious blend of creativity and engineering showcases the potential of modern transportation design.



KEY TAKEAWAYS FROM THE IDEENZUGURBAN PROJECT

EARLY COLLABORATION DRIVES SUCCESS

Engaging material partners like SEKISUI KYDEX early in the process enabled faster prototyping and better alignment between design intent and execution.

INFUSED IMAGING™ ENABLES TRUE CUSTOMIZATION

Unlike traditional materials that rely on repeat patterns, Infused Imaging™ allows each panel to be completely unique. Designers can create personalized woodgrain or marble effects across tabletops, enhancing the passenger experience with a more bespoke aesthetic.

EFFICIENT WORKFLOW FOR COMPLEX DESIGNS

Sampling:

Begin with small-scale samples of woodgrain and logo colors for customer approval.

Design Approval:

Once colors are approved, the internal team finalizes the design layout.

Orientation Documents:

Showing artwork placement relative to each part for customer sign-off.

Sheet Layout:

The appLab™ team maps out each part on the full sheet, optimizing material usage.

Logo Alignment:

Trim marks are used to ensure precise alignment of logos across woodgrain textures.

Production:

CNC routing and quality checks complete the process.

WIRELESS CHARGING INTEGRATION

KYDEX® material supports wireless charging through the surface, a feature not achievable with many traditional materials, opening up new possibilities for tech-enabled passenger amenities.

PRODUCTION EFFICIENCIES & SUSTAINABILITY

By aligning the parts of various sizes across a single sheet, the appLab™ team reduced waste and avoided the need for five separate sheets. This not only saved material but also streamlined the production process.

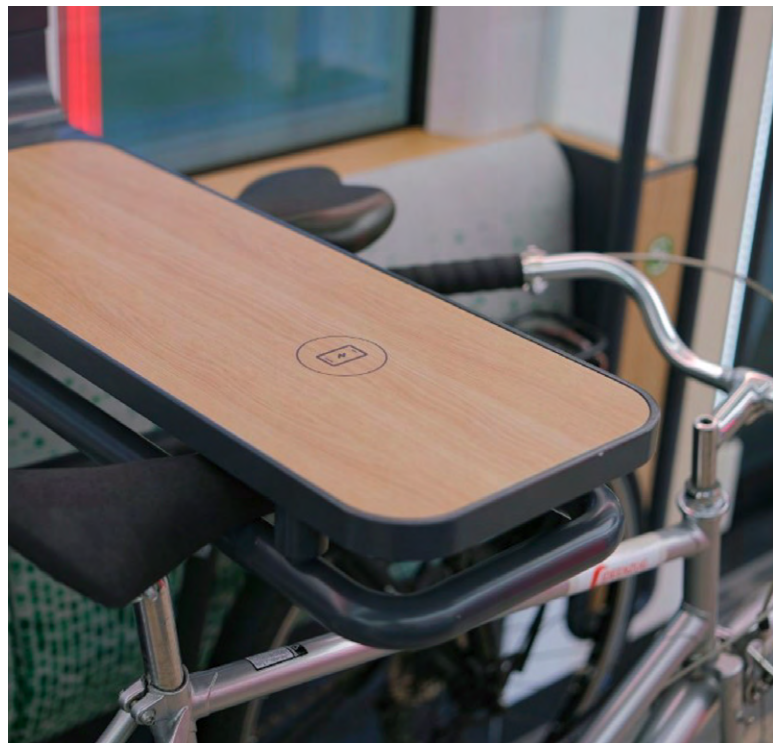
By prioritizing adaptability and sustainability early in development, Hamburg's IdeenzugUrban S-Bahn concept demonstrates how a commitment to sustainability can be seamlessly integrated from the inception of the design process, ultimately supporting even the most ambitious and forward-thinking rail design initiatives without compromise.

DESIGNING WHAT MOVES US

For train interior designers, each project offers an opportunity to improve the passenger journey in lasting ways. With the right materials and partners, compelling designs and functional details can be integrated into parts from the start, guiding the creative process. This not only creates more cohesive interiors but also simplifies production and improves performance over time, while providing the passenger with an inviting environment.

When material suppliers are brought in to collaborate early, teams can cultivate an opportunity for designers to turn concepts into tangible products, striking the perfect balance between aesthetic appeal and functional practicality. With fewer compromises along the way, the result is a train interior that not only meets passengers' needs but also elevates their overall travel experience, making each journey enjoyable and memorable.

In the new era of rail travel, speed, sustainability, and design don't need to compete – they can move forward together.



ABOUT neomind

neomind is a strategic design studio based in Munich, Germany, focused on creating meaningful experiences that improve lives sustainably. With a human-centered approach, they specialize in product design, mobility solutions, graphic design, and UX, blending aesthetics, functionality, and innovation.

Their mission is to shape the future of mobility and everyday experiences by reimagining the objects and services around us. From research to implementation, neomind supports clients throughout the product development journey, driven by empathy, sustainability, and user insight. Learn more at neomind.eu.

SEKISUI KYDEX innovates and creates sustainable thermoplastic material solutions for the next generation of product design.

SEKISUI Chemical's corporate commitment to Speed, Service, and Superiority is realized through the KYDEX® Thermoplastics' business model of manufacturing bespoke materials with short lead times in small quantities. This Quick Response Manufacturing (QRM) model at three manufacturing campuses expands beyond thermoplastic sheet. Our mission is to challenge what's possible and deliver beyond imagination. SEKISUI KYDEX is more than a raw material supplier; we are a solution provider.

The material portfolio also includes injection molding resins, proprietary Infused Imaging™ technology, integral special

effects, unique textures, and custom products and design.

As a collaborative partner and the world's leading pioneer of thermoplastic solutions – done responsibly, we put innovation at the forefront, guiding you from beginning to end.

The SEKISUI KYDEX appLab™ and designLab® Innovation Centers are collaborative spaces for clients and customers to bring the supply chain together for rapid prototyping and design development. These spaces are the bridge between engineering and art. More than 300 dedicated professionals in Bloomsburg, PA, and Holland, MI, working with a global network of sales and distribution partners, are committed to delivering more than their customers can imagine.

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