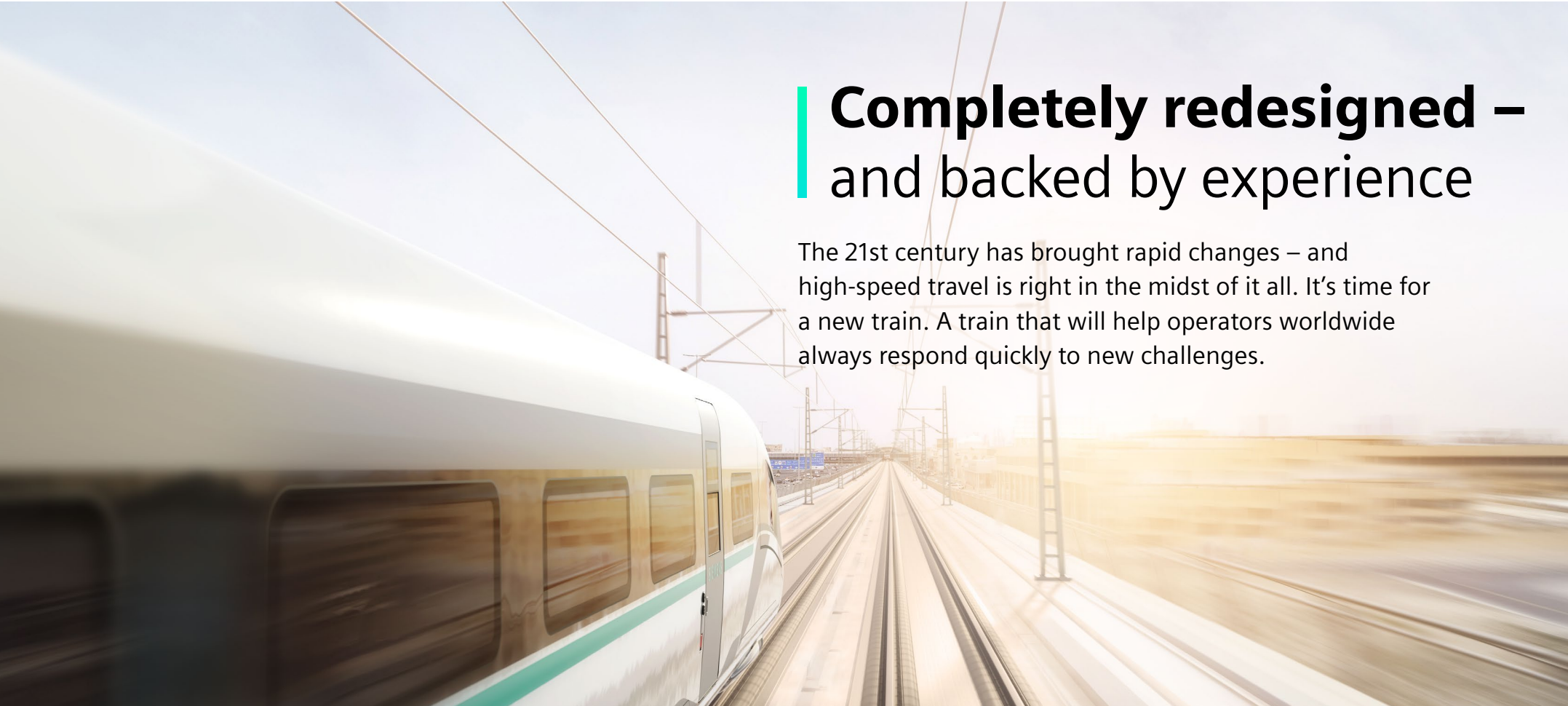


SIEMENS

Velaro Novo Rethink velocity

[siemens.com/velaro-novo](https://www.siemens.com/velaro-novo)





Completely redesigned – and backed by experience

The 21st century has brought rapid changes – and high-speed travel is right in the midst of it all. It's time for a new train. A train that will help operators worldwide always respond quickly to new challenges.

It's the perfect time for the Velaro Novo. After all, the Velaro Novo is the train for everyone who wants a competitive edge in global high-speed and intercity transportation. Because it comes with proven concepts and forward-looking innovations. And it was developed in the spirit of completely rethinking high-speed transport.

The Velaro Novo features a wide range of technical developments that work together in unique ways to minimize maintenance costs, reduce energy consumption, and maximize availability. So that operators today all over the world can now design their rail service cost-efficiently in ways that conserve resources and provide a new level of passenger experience.



Check out the interview with Michael Kopp,
program director for the entire platform.



AERODYNAMIC EXCELLENCE

30 percent less air resistance saves energy

Discover the medium of air in a new way and overcome air resistance – with the Velaro Novo. Many individual innovations come together in the Velaro Novo to create unique aerodynamic perfection.

Streamlined throughout the entire vehicle

The Velaro Novo is setting standards in aerodynamics. From the fully housed bogies to the flow-optimized vehicle roof, the Velaro Novo features trendsetting innovations that reduce aerodynamic drag by more than 30%, contributing to the Velaro Novo's unique energy efficiency.



Optimized head design

The Velaro Novo's end cars are more aerodynamic than previous models, significantly improving aerodynamic drag. The optimized head design ensures side-wind stability and minimizes energy consumption.

Fully housed bogies

The Velaro Novo's bogies are protected from the wind on all sides. The use of inboard-bearing bogies also saves a great deal of weight, helps the train run smoothly, and reduces wear.

Modified roof structure

The Velaro Novo has a completely covered high-voltage system. A new, extremely low-lying pantograph was also developed that can be recessed deep into the roof area.

Streamlined intercar gangways

The Velaro Novo's intercar gangways are completely covered by bellows flush with the train's body shell to prevent air turbulence.



Check out the video to learn about all of the Velaro Novo's optimization measures.



In the interview, Train Architect Dr. Martin Krause discusses the aerodynamic innovations of the Velaro Novo.

A scenic landscape featuring a calm lake in the foreground, reflecting the surrounding mountains and a clear blue sky. The mountains are partially covered in snow. A teal line graph is overlaid on the left side of the image, showing a vertical line that then curves downwards, symbolizing a reduction in costs. The background is a gradient of blue and white, suggesting a bright, clear day.

REDUCED TOTAL COSTS

70 metric tons make everything lighter

Benefit from a new kind of lightness – in a high-speed train that gives you unimagined economic freedom. The Velaro Novo combines economy with future-oriented concepts to maximize your investment security.

Cost efficient over the life cycle

All aspects of the Velaro Novo are designed to maximize cost efficiency, from the drive concept and vehicle construction to the interior space, without compromising performance or comfort. The synergy between all these innovations and our many years of experience makes the Velaro Novo the most economical high-speed train on the market.



Compared with its predecessors, the Velaro Novo cuts CO2 emissions by up to 1,375 metric tons per year

Low total weight

Compared with its predecessor, the Velaro Novo is extremely lightweight. At 420 metric tons, its weight has been reduced by around 70 tons. This weight saving is equivalent to the weight of a medium-range aircraft and is made possible by the seven-car train concept, modern profile, and welding technologies.

Lower maintenance and repair costs

Thanks to synergy between the many optimization measures, the Velaro Novo cuts maintenance and repair costs by 30%. This is due to a range of features, including the train's robust construction that provides the best possible protection from ballast pickup, the reduction in the number of components that need to be maintained, and the cost-optimized and repair-friendly design of the railcar bodies.

Exemplary energy efficiency

When it comes to energy efficiency, the Velaro Novo surpasses even the outstanding Velaro family. Thanks to the all-around reduction of aerodynamic drag, it consumes as much as 30% less energy than its predecessor. Its equivalent gas consumption is an impressive 0.2 liters per passenger per 100 kilometers.



Check out the video to learn how the Velaro Novo's many innovations can help you operate more economically.



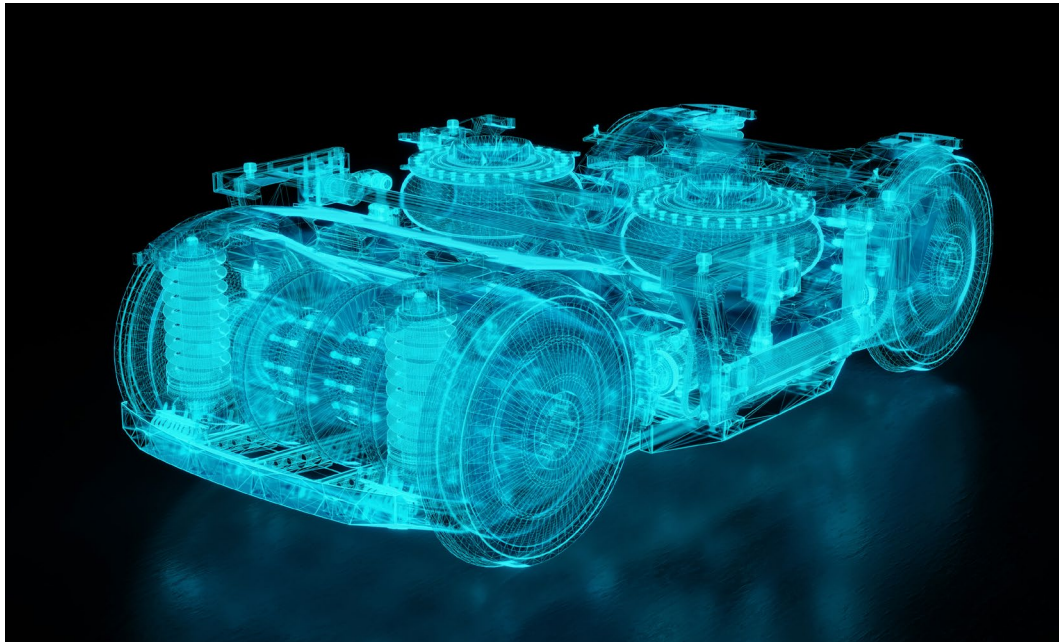
In the interview, Tom Kutscher, head of sales for high-speed and intercity trains, explains how the Velaro Novo's innovations help make the train more economical.



INTELLIGENT MOTION

Inner calm generates new momentum

Power comes in quiet packages – and this is also true of high-speed service. Learn all about a drive concept that combines a smooth ride with braking power to maximize energy efficiency. For a sustainable travel experience that unleashes new kinds of power.



Sustainable without compromise

Safe, energy-saving, cost-efficient: The requirements for forward-looking mobility go hand in hand with enormous challenges for modern drive concepts. The Velaro Novo has the right answers to these challenges, thanks to smart and sustainable innovations.

Inboard-bearing bogies

The Velaro Novo's mass-optimized, inboard-bearing bogies permit the use of aerodynamic full housing.

Energy-efficient drive and brake concept

The energy-efficient drive concept ensures extremely high energy recovery, thanks to 50% more electrical braking power. Service braking can be performed completely electrically all the way to a standstill. This significantly reduces wear on mechanical brake equipment and therefore, repair effort.



Check out the video to learn all about the Velaro Novo's innovative bogie.



Watch the video interview with Alexander Prix, platform manager for high-speed bogies, to learn about the benefits offered by the Velaro Novo's innovative bogie technology.



PROVEN TECHNOLOGY

Four generations of experience results in a new level of evolution

Rely on tried-and-tested technologies that have proven successful in countless test drives. Many years of experience unite with innovative concepts in the Velaro Novo – and it all adds up to a high-speed train that you can always depend on.

Tried and tested down to the last detail

The Velaro Novo combines tried-and-tested innovations with many years of experience. Four generations of Velaro trains have already covered several billion kilometers all over the world at speeds of up to 380 km/h. A test car was developed to assess the entire range of innovations in the Velaro Novo, and it completed its first test run in April of 2018.



Tried-and-tested reliability

The Velaro Novo test car was integrated in DB Systemtechnik's ICE S train and has completed trips all over Germany, covering more than 100,000 kilometers. This means that all innovations have already been evaluated for robustness before they're used in passenger service. So you and your passengers will benefit from a thoroughly tested mobility solution.

Proven top performance

The Velaro Novo combines the experience gained from four Velaro generations that have been used successfully all over the world. The powerful Velaro family not only operates in a wide range of climatic conditions, it also meets many different operating requirements.



Check out the video to learn about the experience and proven concepts behind the Velaro Novo.



Check out the interview with Rene Trosiner, technical manager and specialist in the Velaro Novo test railcar, to learn all about the Velaro Novo test railcar's test runs.



VARIABLE TRAIN

**28.75 meters of
freedom** offer a wide
range of possibilities

Let the Velaro Novo transport you to a world of complete design freedom. With this train, you'll always find the right solution for your specific traffic requirements.



Adaptable to every requirement

Trains have rarely been as open to modification as the Velaro Novo. One factor contributing to this flexibility is that the available interior space was maximized by 10% – giving operators more design freedom and passengers more space.

Empty-tube concept

Respond flexibly to your passengers' various requirements. The Velaro Novo's 28.75-meter railcar bodies are designed with a lightweight structure and follow the empty-tube concept. This means that no fixed or immovable structures are built into the passenger area – for example, underseat containers or electronic cabinets.

Variable train configuration

Choose the train length that best suits your traffic volume from the different versions of the Velaro Novo. The seven-car version can be as long as 202 meters and can be operated with single or double traction. The 14-car version is 404 meters long.



Check out the video to learn all about the Velaro Novo's great flexibility.



Interview with Ben Dobernecker, business development manager for North America

Comfortable in every situation

The train's interior design follows an open concept that makes the car feel extremely spacious, thanks to its long side windows and other features. It also maximizes flexibility: Seats, tables, and luggage racks can be rearranged in any position. As a result, you always find the right interior concept for your specific passenger volume.



The Velaro Novo offers the optimal room concepts for all passenger requirements, from family compartments to business zones with individual workstations.

The Velaro Novo features a modular interior whose design can be modified quickly and flexibly.

RAIL SERVICES

Guaranteed availability

Our Rail Services cover every aspect of rolling stock maintenance – from assuming full-service responsibility on a contractual basis to customer-specific service packages. This ranges from technical support when it comes to overhauls or repairs to demand-based individual services you can call on when needed, such as customized spare parts packages. So you can benefit from highly available trains and smooth operations.



Global expert and service network

With our more than 6,000 service employees from 35 countries, you can rely on many years of experience and the know-how of our rail experts at any time. With our dedicated global expert pool of 800 employees, we also provide flexible support for all challenges. In addition, this expertise is complemented by a powerful, global, physical service infrastructure consisting of more than 100 workshops, depots, and repair centers. In our Alliance for Availability, we also bundle industry-specific knowledge in an open ecosystem. Manufacturers, rail operators, suppliers, partners, universities, and the world of science all share processes, technologies, and know-how using our Railigent and MoBase digital platforms. Our common goal is 100 percent system availability, optimized efficiency, and the protection of your investments.

Reliable partnership

Relying on many years of experience in global maintenance projects and as a manufacturer, owner, and operator of rail-based vehicles, we have extensive knowledge and interfunctional skills – and we are happy to assist you as your trusted partner. By taking over the Entity in Charge of Maintenance (fully or functionally), we offer you a comprehensively developed solution that ensures the safety of technology and operation over the entire life cycle of your vehicles and components.

Digital expertise

Based on decades of our practical experience, our digital services are key to guaranteed availability, maximized throughput, and new business models. From sensor systems to smart algorithms and precise analytics, we provide the basis

for predictive maintenance, optimized asset management, and efficient operation. This results in a significant increase of reliability, availability, and the cost-effectiveness of your systems.

IoT platforms with added value

With Railigent, our mobility application suite, you'll enjoy all the benefits of our Digital Services – from full transparency of all events relating to your vehicle fleets and routes, to precise conclusions and recommendations thanks to AI-based smart data analyses. On our digital marketplace MoBase, we also offer an unparalleled variety of products and services. MoBase provides you with easy access to more than 800,000 web components from over 3,000 manufacturers. You benefit from efficient processes and short delivery times.



ABOUT SIEMENS MOBILITY

A partnership for future-oriented mobility

Mobility operators need a partner that understands their business and shares their passion for mobility. A partner that offers solutions for the many challenges of the era and puts its customers 100% at the heart of its activities. A partner they can work with to shape the future of seamless, sustainable, secure, and reliable mobility. And we are that partner.

Our mission

With our focus on digitalization and innovation, we're already finding the answers to the challenges of the future. Thanks to digitalization, we're enabling mobility operators worldwide to ...

- ... make trains and infrastructure intelligent,
- ... increase value sustainably over the entire life cycle,
- ... enhance the passenger experience, and
- ... guarantee availability.

What drives us

Mobility doesn't stand still. The way we move and travel is constantly changing and becoming more comfortable, personalized, intermodal, and networked. As mobility pioneers, we're spearheading this transformation – and we're conceptualizing travel in holistic terms: moving away from individual means of transportation toward the seamless travel experience. That's why we're constantly updating our portfolio in our key areas of rail vehicles, rail automation and electrification solutions, and the associated services and turnkey systems – and are therefore able to offer our partners future-proof, technologically superior solutions for their mobility needs.

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