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Avenio – fits your city.

The new 100% low-floor tram for your city.

Avenio – fits your city. Made for where you live.

**A new dimension in the 100% low-floor category awaits your discovery: Avenio.
Siemens has created a unique synthesis of single-articulated and multi-articulated tram, combining proven components and new ideas. It's an innovative vehicle that's made for your city.**

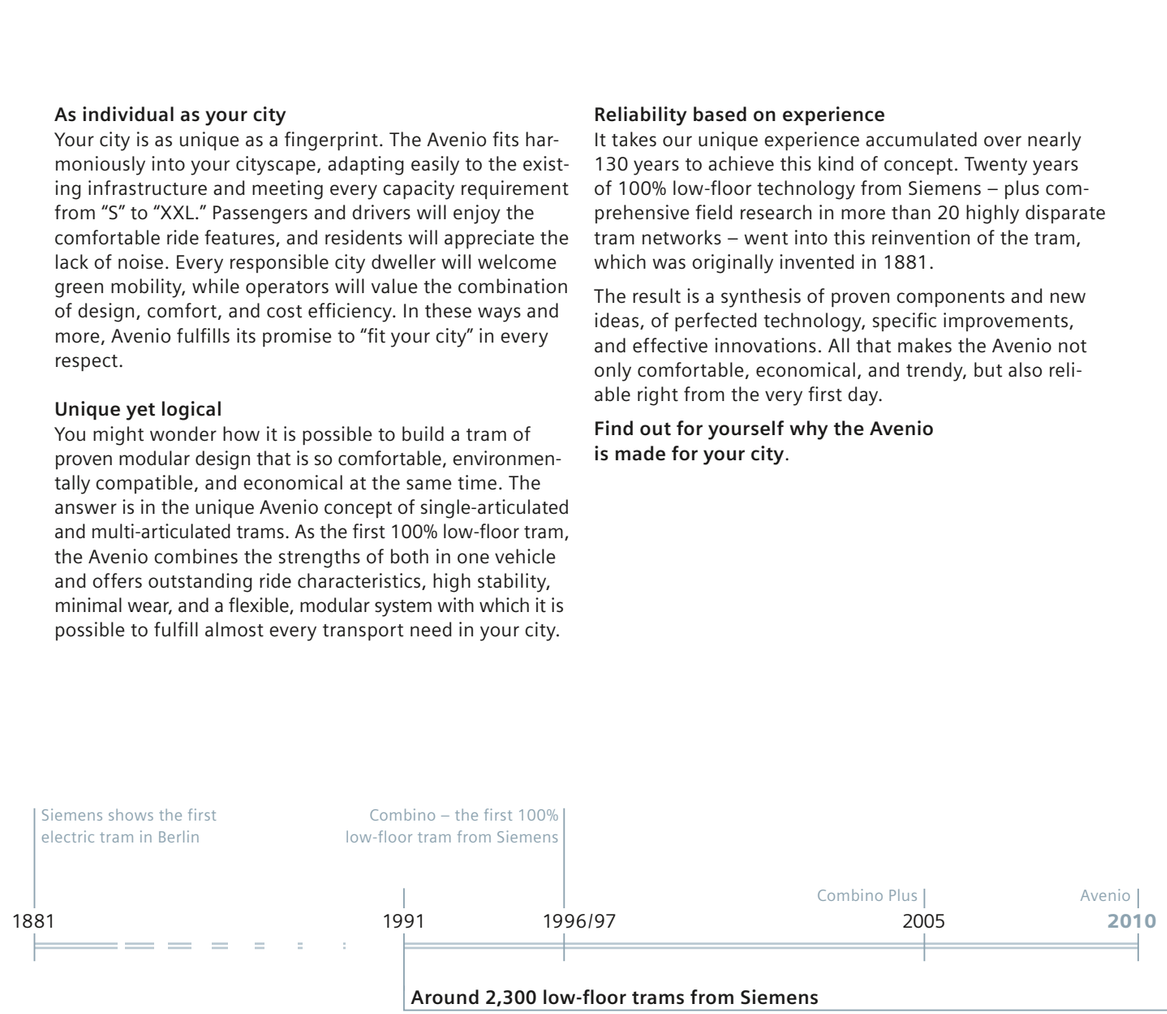
As individual as your city
Your city is as unique as a fingerprint. The Avenio fits harmoniously into your cityscape, adapting easily to the existing infrastructure and meeting every capacity requirement from "S" to "XXL." Passengers and drivers will enjoy the comfortable ride features, and residents will appreciate the lack of noise. Every responsible city dweller will welcome green mobility, while operators will value the combination of design, comfort, and cost efficiency. In these ways and more, Avenio fulfills its promise to "fit your city" in every respect.

Unique yet logical
You might wonder how it is possible to build a tram of proven modular design that is so comfortable, environmentally compatible, and economical at the same time. The answer is in the unique Avenio concept of single-articulated and multi-articulated trams. As the first 100% low-floor tram, the Avenio combines the strengths of both in one vehicle and offers outstanding ride characteristics, high stability, minimal wear, and a flexible, modular system with which it is possible to fulfill almost every transport need in your city.

Reliability based on experience
It takes our unique experience accumulated over nearly 130 years to achieve this kind of concept. Twenty years of 100% low-floor technology from Siemens – plus comprehensive field research in more than 20 highly disparate tram networks – went into this reinvention of the tram, which was originally invented in 1881.

The result is a synthesis of proven components and new ideas, of perfected technology, specific improvements, and effective innovations. All that makes the Avenio not only comfortable, economical, and trendy, but also reliable right from the very first day.

Find out for yourself why the Avenio is made for your city.



Avenio – the reinvention of the tram: single-articulated vehicle combined with the advantages of multi-articulated concept

Made for any infrastructure – and every network

Many cities suffer from a shortage of parking space and traffic gridlock, and struggle to meet stricter emission guidelines. They would be only too happy to reintroduce trams, but worry that 100% low-floor trams would require massive investments in infrastructure. The Avenio demonstrates that this is not necessarily so. Existing lines and bridges can still be used without having to renovate tracks or reinforce bridges, let alone avoid tunnels.

Old tracks – a new approach
Even unfavorable infrastructure like narrow streets, old lines, and warped tracks does not faze the Avenio. Thanks to its concept, bogies and wheels react smoothly to every motion without stressing the car body. And thanks to this design, the evenly distributed axle loads are the lowest of any 100% low-floor tram. As a result, the Avenio glides elegantly across the bridges of your city without exceeding permissible axle loads.

Unique concept – unprecedented comfort
The Avenio's standard combination of symmetrical load distribution, harmonic track guidance, and balanced interplay of forces not only reduces wear and tear on tracks and bridges, but also makes the tram a totally new experience. Drivers and passengers can enjoy quiet, jolt-free travel without being forced into uncomfortable positions on curves. Meanwhile, residents can also look forward to the convenience of trams at their doorstep without the screeching of wheels and other noise usually associated with trams.

Higher availability – lower maintenance requirements
In the Avenio, forces work together rather than in opposition – and this extends the life of important components. A striking example are the tires. On conventional low-floor vehicles these often have to be changed after 100,000 to 250,000 kilometers. Tires on the Avenio, in contrast, last two to three times as long. Since maintenance always requires a stay of up to three days in the shop, during which time replacement vehicles have to be deployed, this results in economic benefits over and above the material and wage costs.

The Avenio environmental bonus:
The Avenio rides extremely quietly, even on older tracks, thanks to the low wheel-rail loading. In addition, a large number of noise-abating measures have been implemented, for example, "silent" electric brakes that slow the tram down to a stop, rubber-suspended tires, and auxiliary units that are throttled back or switched off completely when the vehicle is at a standstill. Siemens has even eliminated the whistling noise from the traction units.

The Avenio's concept increases the service life of the tires and so considerably reduces downtimes for maintenance. The graphic shows the maximum mileage before the next shop visit compared to other low-floor vehicles.

Designed for any need – and for more passengers

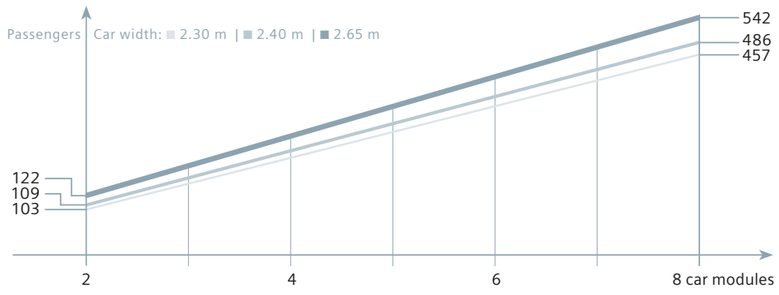
High capacity, fast passenger boarding and disembarking, fast tempo – the Avenio helps you redefine efficiency in regional transport. Thanks to the use of a modular concept throughout, Siemens can offer you exactly the right vehicle for your requirements, from the compact 18-meter tram to the longest tram in the world. Up to 30% of the vehicle's length can be fitted with wide doors, optionally on one or both sides.

From 18 to 72 meters
Only the Avenio concept allows a flexible configuration with standard car modules of nine meters each, from two to eight units, from 18 to 72 meters in length. Your capacity requirement alone dictates the right choice for you. In the Avenio maxi version, one driver transports more than 540 passengers from A to B comfortably and with plenty of leg and elbow room. At full loading, it can easily accommodate 700 passengers to cover peak loads in the case of special events.

Fast boarding and deboarding
In order to ensure that even very large numbers of passengers can board and deboard quickly, the Avenio concept also offers a solution that is not available with every 100% low-floor tram. Wide double doors can be installed on both sides and over the entire length of the vehicle, even directly behind the driver's cab. The Avenio is a true miracle when it comes to space, with 16 fully usable seats in the chassis zone and additional standing room in the generously dimensioned articulated sections. All this in a tram with an end-to-end gangway and a transparent layout where your passengers will feel comfortable and safe.

From tram to light railway
Naturally, transport performance is also a question of speed. Where the distances between stops become longer in the suburbs, the Avenio can easily accelerate to 80 kilometers per hour, because it can not only travel smoothly through curves but also rapidly and quietly on straight stretches. High speed means shorter turnaround cycles, allowing a potentially leaner vehicle fleet. That pays dividends, not just with regard to procurement but also proportionally when it comes to maintenance.

The Avenio environmental bonus:
Despite its powerful transport performance, the Avenio hardly leaves a trace. There is no air pollution from brake abrasion, and the small quantity of lubricants it needs are biodegradable. It also minimizes electromagnetic radiation. And when, after 30 years or more, the Avenio reaches the end of its useful life, it is more than 90% recyclable.



A choice of three different vehicle widths, trams with two to eight modules – that's flexibility à la Avenio. The graphic shows how many people can be transported in the various constellations. The basis for calculation in each case is a bi-directional, for standing places with four passengers per square meter.

Made for your city – and your budget

Design, comfort, economy: the Avenio reconciles these apparent contradictions to create a convincing and attractive whole. With its elegant exterior design and distinctive appearance, it integrates harmoniously into your cityscape. Your passengers will love its design and comfortable ride – and its cost efficiency will satisfy any hard-nosed accountant.

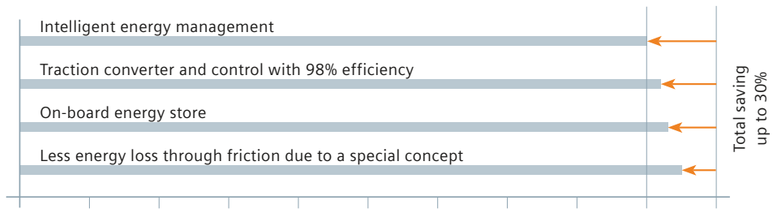
Freedom through intelligent design
Thanks to its clean lines and its eye-catching front end, the Avenio is an attractive feature of the street scene. This impression continues inside with the bright, step-free, transparent passenger compartment. Large doors and panoramic windows give it a friendly, inviting ambience. Many details, including visibility throughout the entire passenger compartment, smart door monitoring, and the view of the driver give your passengers a sense of security. And as far as the cityscape is concerned, good ventilation allows passengers to enjoy the view even in wet weather.

Opening the way for low costs
Does attractive, intelligent design really need to be expensive? The Avenio proves the opposite to be true. The Avenio concept in particular allows appreciable cost savings over the entire lifecycle.

Energy costs are just one example. Thanks to low axle loads and the ample weight reserves this provides, an optional energy store can be integrated on-board. Along with other measures, this helps cut energy use by up to 30%, a high, ongoing cost savings.

Free view of the sights
The Avenio is designed to make beautiful cities even more attractive. An overhead line would look out of place near time-honored buildings or along leafy avenues. With the energy stored on board – which can be recharged in less than a minute – the Avenio can cover a distance of up to 2.5 kilometers without the need for a contact line. Naturally, this advantage also applies in crossing complex intersections and passing under low city gates, through tunnels, and under bridges.

The Avenio environmental bonus:
An efficient use of energy helps keep cities beautiful and green. The Avenio can, for example, store valuable braking energy while in motion and reuse it, instead of dissipating it as heat. It also helps significantly reduce the CO_2 footprint of your city.



The Avenio reduces energy use by up to 30% through the combination of different standard and optional components.

Made for your challenges – today and tomorrow

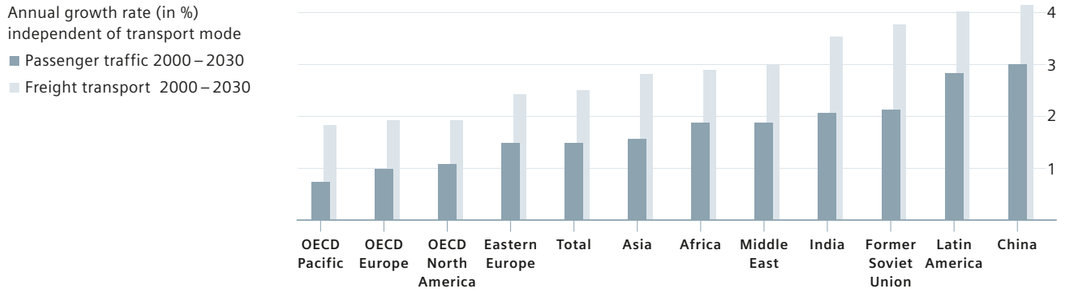
The Avenio helps cities make mobility more sustainable and economical for all infrastructures and transport requirements and for every cityscape. It is part of "Complete Mobility," a unique worldwide concept from Siemens aimed at networking transportation systems for fast, reliable, and environmentally friendly passenger and freight transport – all from a single source of supply.

Cities and resources – new implications
Cities around the world are facing new challenges. According to the United Nations, two thirds of the world's population will be living in cities by as early as 2030. At the same time, energy is becoming scarcer and more expensive and climate problems more urgent. This intensifies the necessity of taking a holistic approach to mobility; not by developing individual traffic routes or by regulating specific modes of transport, but with an all-embracing concept.

Concept and implementation – everything from Siemens
With Complete Mobility, Siemens is the only company that not only has a holistic transportation concept but also has the right products and expertise to implement it. The solutions range from operational management systems for railway and road transport technology to railway power supply and rail vehicles for suburban, regional, and mainline traffic, to turnkey systems, airport logistics, and post automation – combined in each case with groundbreaking service concepts.

Mobile and environmentally friendly – the city of the future
The Avenio is an important element in urban mobility of the future. It helps harmonize road and rail more effectively, allows operators to make more efficient use of shop capacities, and lets them profit from synergies in the future development of energy-saving technologies.

That's Complete Mobility in practice:
Made for where you live. **Avenio – fits your city.**



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Avenio – fits your city.

Using proven components – improving tried and tested ideas – implementing innovations: Details about the vehicle and technology.

Made for your requirements – today and in the future

Variable vehicle length and width, one-way or bidirectional vehicle, different supply voltages: The Avenio provides the right solution for your transport requirements – today and in the future.

2 modules | 18 m	Seats	Standing places	Total
2.30 m	24	79	103
2.40 m	36	73	109
2.65 m	36	86	122
3 modules | 27 m	**Seats**	**Standing places**	**Total**
2.30 m	42	118	160
2.40 m	50	122	172
2.65 m	52	140	192
4 modules | 36 m	**Seats**	**Standing places**	**Total**
2.30 m	52	170	222
2.40 m	72	164	236
2.65 m	72	192	264
5 modules | 45 m	**Seats**	**Standing places**	**Total**
2.30 m	68	211	279
2.40 m	96	200	296
2.65 m	96	235	331
6 modules | 54 m	**Seats**	**Standing places**	**Total**
2.30 m	80	260	340
2.40 m	112	250	362
2.65 m	112	292	404
7 modules | 63 m	**Seats**	**Standing places**	**Total**
2.30 m	104	292	396
2.40 m	144	276	420
2.65 m	144	326	470
8 modules | 72 m	**Seats**	**Standing places**	**Total**
2.30 m	116	341	457
2.40 m	160	326	486
2.65 m	160	382	542

Calculation base for standing places: 4 passengers/m², bidirectional operation

Made for where you live – to fit your city.
With Avenio, Siemens puts a unique vehicle concept on track.
Your key benefits at a glance:

- **You can rely on about 130 years of experience** from the company that invented the electric tram.
- **You'll please drivers, passengers, and neighbors** with a fast, comfortable, quiet tram.
- **You can continue to use older track and bridges,** thanks to the lowest axle loading of any 100% low-floor tram.
- **You can meet any capacity demand,** up to the longest tram in the world.
- **You'll enrich your cityscape with elegant design –** if desired, for operation with no contact lines.
- **You'll make your city greener,** and reduce its CO_2 footprint.
- **You'll operate with reduced lifecycle costs (LCC),** thanks to low wear and efficient technology.
- **You'll be advancing the mobility of the future –** through innovative technology and a unique concept.

The driver's cab:
a workplace to feel comfortable in

The ergonomic, well-designed driver's cab has individually controllable air conditioning. A modern desk design, comfortable seat with multiple settings, and excellent ride comfort with no lurching sideways create extremely comfortable working conditions for the driver. Clear control panels and a large display are additional pluses.

It's the little things that count:
ease of maintenance gets top priority!

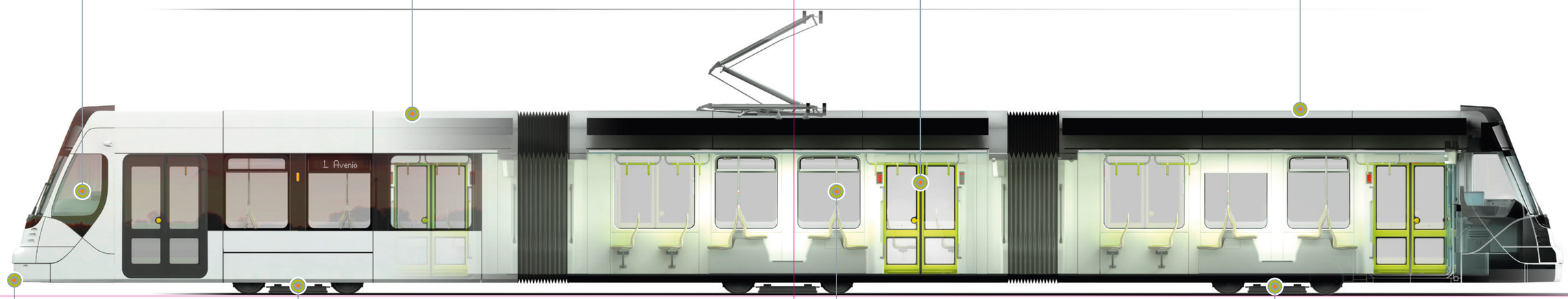
Many important components are readily accessible via the partially walkable tram roof, or else directly from the passenger compartment. The Avenio is generally designed for efficient maintenance anyway. Thanks to the user-oriented diagnostics system in the driver's cab, potential faults are detected immediately and can often be quickly rectified by the driver. Sanding equipment and other containers can be accessed easily for maintenance. The minimized complexity of the systems – which means a larger proportion of identical parts – simplifies repairs and spare parts inventories. Finally, the modular construction allows individual car body units to be moved in the workshop without auxiliary bogies – to save time there as well.

The doors: fast in, fast out

Up to 30 percent of the vehicle length, including directly behind the driver's cab, can be fitted with wide double doors thanks to the intelligent arrangement of the bogies. The modular design is suitable for one-way and bidirectional vehicles; corresponding door configurations are possible on one or both sides. These prevent dead ends at the front and rear of the tram and guarantee fast boarding and deboarding, an important factor in reducing stop times and for keeping to the timetable. After all, punctual trains make passengers and operators happy. When doors are opened, the platform in the door area is illuminated – an important safety feature, just like the door monitoring with light barrier, antitrap protection and warning signal.

The traction system:
energy-efficient throughout

The latest generation of traction converters and traction control are used in the Avenio. With an efficiency of over 98 percent, these components substantially contribute to the good overall energy balance.



The vehicle front end:
elegant and safe

Thanks to the individual design options, the elegant front end of the Avenio fits any cityscape. The innovative crash concept, which already complies with the collision scenarios specified in EN 15227, offers driver and passengers maximum protection in collisions. Passive safety for pedestrians was also an important criterion for the front-end design. Here good all-round visibility for the driver and the special nose design play a key role. The complete front end can be repaired quickly after an accident – this prevents long downtimes.

The unique concept:
low-wear, comfortable, energy-saving

With the Avenio you get the best of both worlds – a single-articulated tram with chassis elements of multi-articulated vehicles. This unique combination of articulated joint, bogie and traction unit is attractive in every respect: advantages include superb ride comfort, low wheel and rail wear, reduced noise emission and low energy consumption.

The inside:
treating passengers like guests

The 100% low-floor interior with an entrance height of max. 350 mm is a winning combination of ample space, good overview and great transparency. Multipurpose areas make for a relaxing journey for passengers with prams, bikes or bulky luggage as well as for passengers in wheelchairs. Colors, seating arrangements and seat types, handrails and infotainment screens are available in a large choice of configurations. An efficient air-conditioning system and optional on-board energy store can be easily integrated thanks to ample axle load reserves. All electronic and control elements are accommodated either in the under-desk cabinet or on the roof – while the inside is reserved for the passengers.

The bogie:
triple suspension, simply brilliant

The bogie's triple suspension system minimizes rolling noises and floor vibrations, guaranteeing a very quiet journey at speeds up to 80 km/h. The traction concept with longitudinally coupled individual wheels has proved successful in thousands of applications. The symmetrically suspended vehicle modules are connected via articulated connections that turn along the longitudinal axis. This creates a construct in which the wheels basically move into the curve by themselves, while the car body above rotates smoothly away. As a consequence the Avenio can even negotiate curves and track deformations without jamming, unpleasant jolts or abrupt movements.

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