With Vectron, Siemens is breaking new ground while also focusing more intensively than ever on customer benefits. How this is being achieved is described below.

Breaking new ground – on the one hand, it’s desirable. And yet every customer of new rail vehicles worries about initial difficulties with pioneering technologies, until their performance stabilizes. That’s why we have combined stable, proven solutions from the Eurosprinter and Eurorunner with prudent innovations focused clearly and exclusively on providing customer benefits.

What is new about the Vectron?

In principle, even the way the Vectron originated is new: The Vectron fulfills requirements that were defined based on an analysis of operating and project experience from over 1,600 Eurosprinters and Eurorunners in service, market requirements, customer feedback, and customer interviews, as well as sensitivity analyses of technical parameters related to relevant transport needs.

The first product on the European locomotive market

Locomotives have generally been built to order for a customer. They have then been frequently further developed into a platform where the vehicle concept, including the customer’s preferences, was defined as the standard. Vectron, on the other hand, was designed and developed independently of any individual customer requests, focusing specifically on the transport needs within the market.

The development goal – apart from creating basic technical data better than that of the competition – was to achieve optimum total cost of ownership. This includes investment security, fungibility, retrofitting and conversion capability, and – thanks to a wide array of options – dispensing with specific customer features and special solutions in the basic variants.
Vectron is thus the first real product on the European locomotive market that is designed to meet the traction needs of our customers efficiently and cost effectively:

- Pure traction in four possible variants: AC, DC, MS (multisystem) and DE (diesel-electric)
- Modular country kits
- Basic certified preferred variants with attractively short delivery times

Vectron is a product with many different predefined options for meeting existing customer needs with proven solutions. Customers with requirements falling within this predefined solution area receive a highly individualized, cost-effective solution quickly. Vectron also offers the option of customized modifications. Preferences above and beyond the predefined portfolio can be easily fulfilled, based on specific development and, if necessary, homologation work.

**Smart combination of proven technologies**

Vectron is a new concept, incorporating aspects of our current Eurosprinter and Eurorunner platforms and current and future market needs. It specifically combines well-established technologies with innovations designed to meet market requirements and expressly focused on providing customer benefits.

During the course of the customer benefit analysis, we deliberately avoided changing the structure of the proven front end of the last generation of Eurosprinter and Eurorunner simply for the sake of a short-term marketing effect. Newly developed design elements provide the Vectron with an unmistakable “face”. The unchanged future-oriented and timeless frontend remains a standardized replaceable part that absorbs the crash energy and also enables the locomotive to be put back into service quickly after an accident.

The proven technologies also include the pinion hollow-shaft drive, known from the Eurorunner, which is now also being further developed for the electric Vectron locomotives for the high-performance class. With this kind of drive the whole speed range up to 200 km/h can be covered without bogie exchange. Vectron electric locomotive bogies are designed with wheel brake disks and a standard pivot solution, which has proved its viability in the Eurosprinter ES64F4 (e.g. DB BR 189 or Mitsui ES64F4). This solution is a module in the overall concept of unrivalled traction delivery of Siemens locomotives.

For Vectron DE the proven bogie of the Eurorunner has been developed further. The speed range has been extended to 160 km/h.

**Clear locomotive layout**

A widely debated issue is the question of layout. Systematic analysis has shown that there is only one answer: When deciding on the overall concept for Vectron, we ruled nothing out, and made conscious design decisions based on rigorous testing. The decisive criteria were customer focus, economy of space, serviceability, transparency, safety, flexibility, conversion capability, and last but not least, total cost of ownership.

Thus Vectron follows perfectly tailored solutions for layout and bogie for both the applications “electric locomotive” and “diesel locomotive”. This provides a real customer benefit not only one on paper, and avoids massive disadvantages.

The engine room layout was also studied intensively and a straight aisle solution was selected after due consideration. A lateral gangway and Y/Z gangway were rejected. A panic-proof, straight emergency escape route with no dead ends provides undisputed life-saving advantages for the locomotive driver in emergency situations. Utilization of space without transverse gangways is optimum and is the best solution for ease of maintenance, thanks to the wide gangway.
That’s why you will not find compromises in that regard with Vectron at the expense of the customer. With regards to communality between electric and diesel locomotive Siemens concentrated on uniform handling, LCC-relevant parts and future proofness.

### Green mobility – a matter of course

For Siemens, it has long been a matter of course to develop exemplary ecological solutions with which our customers can demonstrate their sense of responsibility for protecting our planet. The integral Green mobility features of Vectron and its production process include:

- Highly efficient use of the braking energy (regenerative braking and utilization for secondary operations and train power supply)
- High level of efficiency
- Environmentally sound manufacturing, protection of natural resources
- Use of water-soluble paints
- Use of environmentally friendly materials
- Re-use analysis (product environmental declaration)
- Diesel engine with particle filter acc. to EU97/IIIIB

### Investment protection and flexibility

Vectron is designed as a product for your business – a business with long-term perspectives and many uncertainties. Today, you purchase a vehicle which is in service for the next quarter century or more. There are thus risks associated with the purchasing decision. It is these risks that we minimize, as far as possible, with Vectron.

- The flexible country package concept allows subsequent upgrading and conversion between different corridors with little cost and effort so that your vehicles are ready for new transport tasks within a short time.
- If you opt for a corresponding pre-equipment package for the electric Vectron locomotive, the maximum speed range can be extended through subsequent upgrading, up to and including the passenger sector, thereby substantially enhancing the service range of the vehicles.
- If you intend to minimize the restrictions on the future area of operation of your electric Vectron fleet, an MS pre-equipment package is available. This contains a suitably prepared transformer and power converter, but offers a considerable cost advantage over a fully equipped multisystem locomotive. Subsequent upgrading to an MS locomotive with this pre-equipping package involves only a short stay in the workshop.
- All Vectron locomotives are equipped with a standard modular user-oriented driver’s desk, combining the ergonomic advantages of the central desk layout, based on UIC612, with the option of an assistant driver’s position with full UIC field of vision.
- Vectron features a head end in which center buffer couplings can also be integrated easily as well as a classic screw coupling with side buffers – included in the initial design or as a conversion.
Vectron seamlessly integrates into your fleet. All Vectron locomotives can be operated in multiple unit operation. In addition multiple unit operation with all modern Siemens locomotives and some locomotive classes of other suppliers is a no-brainer.

This unprecedented flexibility firstly opens up new business opportunities and secondly improves your ability to respond to changing circumstances. As an established global manufacturer – and not only of rail vehicles – Siemens is a long-term partner, you can rely upon.

The characteristics of Vectron are reflected in increased fungibility of the asset, which allows a higher residual value in financing models and hence lower monthly payments for the lessor compared with rival products.

As part of the focus on total costs, Vectron offers unrivalled maintainability overall, thanks to the valuable experiences of our Eurosprinter and Eurorunner customers, which we took great care to incorporate. With good reason, Siemens was the first manufacturer to set standards of long inspection intervals – and this is continued with Vectron. Of course, all Vectrons can be equipped with remote data access for remote fault diagnosis and can be protected with the Vectron Railcover service concept.

Limitless future

Vectron combines mature technical solutions and innovations with many years of experience in locomotive building and a consistent focus on the market, customers, and transportation needs.

Vectron – the innovative product of our experience, for your future.