



VECTRON DUAL MODE

# Keeps going where the wire ends

Whenever an overhead wire is available, it should be used. Electrical operation is much more cost effective and environmentally friendly than diesel operation. But because Germany will continue to have many non-electrified sections of track for a long time to come, many diesel locomotives continue to operate under a contact line. This makes very little economic or ecological sense. What if there was a real alternative – a locomotive that excels at both operating modes?

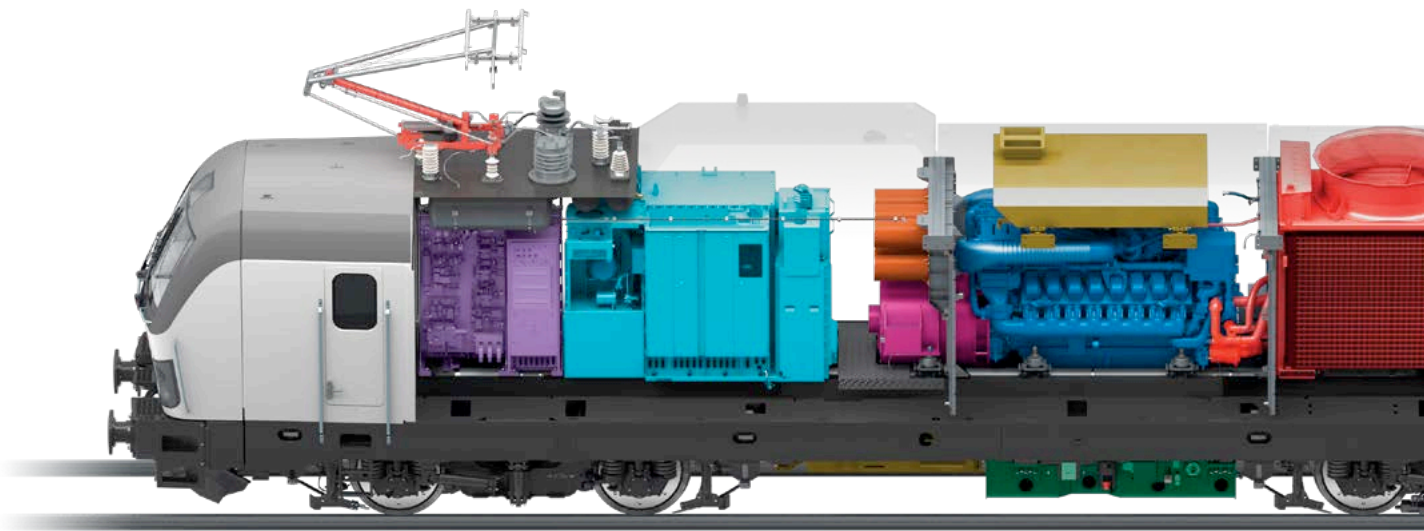
[siemens.com/vectron-dual-mode](https://www.siemens.com/vectron-dual-mode)

**SIEMENS**

Vectron® Dual Mode adapts itself to the route. With powerful diesel traction as well as equipment for using the overhead wire, you're free to change at any time. You can operate extremely efficiently and economically under catenary for long sections of track. When necessary, just switch over – and keep moving, whatever the conditions.

Longer subsections without an overhead wire, unplanned detours, the reduction of fine particulates in metropolitan areas: There are many reasons to opt for flexible traction. Vectron Dual Mode combines the benefits of a full-featured diesel locomotive with those of an electric locomotive, with verifiably profitable results. So drive ahead!

## When subsections **become a unified whole**



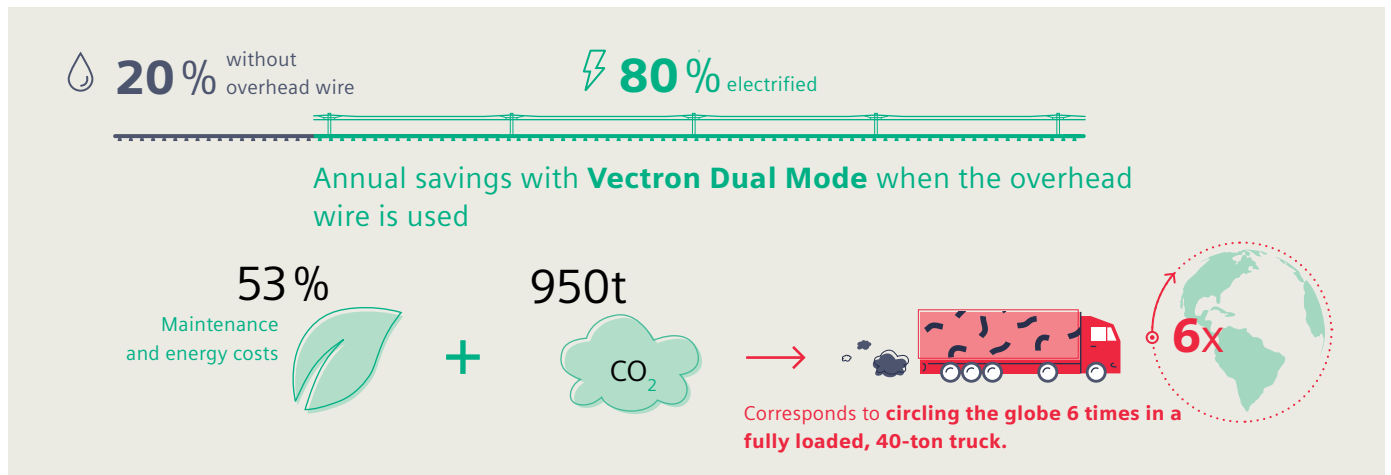
By choosing Vectron Dual Mode today, you're opting for proven technology that you can continue to rely on tomorrow and beyond – while also enjoying maximum flexibility, saving money, and protecting the environment. You benefit from high availability and planning reliability, even when conditions change.

### **Drastically reduce costs**

With Vectron Dual Mode, running on electricity alone when on electrified track sections is a matter of course. Every kilometer saves fuel and thus reduces energy costs. You also reduce the number of hours your diesel generator set is operating, which in turn decreases maintenance outlay. Consequently, Vectron Dual Mode handles a wide range of traction tasks much more economically than a standard diesel locomotive. So why not use electric power when it's available?



Example application: **Vectron Dual Mode compared to pure diesel operation\***



\*with an average annual mileage of 150,000 kilometers and 4,000 operating hours per freight locomotive

**Improve environmental performance**

Vectron Dual Mode protects the environment. It enables you to make an important contribution and cut down on emissions – factors that are becoming increasingly important in cities and metropolitan areas. By taking advantage of electricity wherever possible, you demonstrably reduce carbon dioxide, nitrogen oxide, and particulate matter emissions, thereby improving your fleet’s environmental performance.



**Components**

- Dynamic braking resistor
- Alternator
- Train-protection cabinet
- Electric cabinet with central blower and switching equipment
- Engine cooling plant
- Brake rack
- Diesel engine
- Fuel tank
- Particle filter
- Main transformer
- Engine air intake system
- Pantograph

**TECHNICAL DATA**

<b>Diesel engine power</b> (at the crankshaft)	2,400 kW	<b>Vehicle length</b> (length over buffers)	19,975 mm
<b>Voltage system</b>	15 kV/ 16.7 Hz	<b>Track gauge</b>	1,435 mm
<b>Starting tractive effort</b>	300 kN	<b>Fuel tank volume (usable)</b>	2,600 l
<b>Traction power at the wheel rim</b>	Electric mode: max. 2,400 kW Diesel mode: 2,000 kW	<b>Wheel diameter</b>	1,100 mm / 1,020 mm (new / worn)
<b>Electric braking effort</b>	150 kN	<b>Weight (max.)</b>	90 t when fully loaded
<b>Electric braking power at the wheel rim</b>	Electric mode: 2,100 kW Diesel mode: 1,700 kW	<b>Double traction</b>	Via WTB ÖBB: with same-type vehicles as well as Vectron E, Vectron DE, and ER20
<b>Max. speed</b>	160 km/h	<b>Train protection</b>	PZB, ready for ETCS
<b>Wheelset arrangement</b>	Bo'Bo'	<b>Wheelset load</b>	22.5 t
<b>Area of application</b>	Freight transport		

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