

### Industry Sector Mobility Division

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#### InnoTrans 2010 – Pre-Fair Report

#### **Vectron – Siemens' universal locomotive for rail transportation in Europe**

**Siemens presents Vectron, a new locomotive generation that has been developed for the widest possible range of traction tasks. These locomotives can be used for both national and cross-border passenger and freight traffic and are built for a maximum speed of either 160 km/h or 200 km/h. The various performance classes and voltage systems – with either alternating current (AC), direct current (DC) or multi-system type – enable the locomotive to be configured easily to individual requirements. Country-specific automatic control systems can simply be exchanged or added. Another special feature is the front end that is designed as an internal deformation zone. This can be readily disconnected from the rest of body, thus ensuring easy replacement in the event of an accident. The components in the machine compartment are arranged to make the best possible use of space. The completely modular concept is also suitable for operators who require only small numbers of vehicles.**

Rail transportation in Europe is changing at an ever faster rate. The logistics are becoming more and more complex; goods have to be moved more quickly and over greater distances. The cross-border traffic in Central Europe and on the Southeast Corridor is already heavy and will continue to increase. Modern locomotives have to be capable of serving these main routes and future growth regions, which means they have to be interoperable and pre-equipped to operate there. They have to be built to ensure easy conversion to country-specific systems and equipped with intelligent train protection concepts. In addition, greater environmental awareness and new logistics concepts are elevating the importance of national transports by rail.

Siemens offers a number of Vectron versions for a range of transportation tasks. The Vectron not only covers the high performance class up to 6400 kW but also provides solutions in the medium performance class up to 5200 kW for regional passenger traffic and lighter freight trains. A diesel-electric version is planned for the medium term. The locomotive body is designed to withstand

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stresses with a maximum static tensile force of 1,500 kN and a maximum static compressive force of 2,000 kN.

The service-proven, semi-suspended hollow shaft motor drive has been developed further for the required speed range. The lower unsprung masses reduce track wear. The standard Vectron is designed for a maximum speed of 160 km/h, but it can be upgraded to a 200 km/h high-speed version with an appropriate preliminary equipment package and without having to change the bogies. The bogies can be originally equipped or retrofitted with active rotational dampers (ADD). The ADD fulfills the function of a conventional rotational damper while also being an actuator. This reduces the guiding forces in curves and increases wheel service life because tread and wheel flange wear is lower.

The machine compartment layout, with a central aisle, makes optimum use of space and also makes maintenance exceptionally easy. Racks with the same functions have the same specified locations in all versions. It has been possible to shorten the traction converter even further. The space subsequently gained from this has been used to install the AC main current components alongside the DC components in the machine compartment instead of on top of the roof. This substantially reduces the cost of repairs and the length of downtimes in the event of damage to the overhead contact line.

The Vectron's train protection concept is exceptionally versatile. The locomotive is preconfigured for operation in almost all European countries. There are three fixed rack positions in the machine compartment for the train protection cabinets. The cabinets themselves have a modular design for easy conversion and retrofitting. The underfloor area and the bogie have also been prepared for the mounting of antennas and speed encoders. The concept of predefined installation locations has also proven itself for the driver's desk because subsequent retrofitting does not require any makeshift structures.

The Vectron has major advantages when it comes to safety. Firstly, it has a defined deformation zone in the front end, which can be disconnected from the body. Secondly, the straight, central aisle provides a quick escape route.

The new Railcover service concept was developed in conjunction with the Vectron. It offers freely combinable modules for the spare part supply, maintenance and servicing, which can be selected to match the customer's specific requirements. Various grades of support can be provided to

ensure the highest possible availability, ranging from mobile on-site support to full service for the complete vehicle fleet.

You can access the press release in the Internet at:

[www.siemens.com/mobility/presse/pressemitteilungen](http://www.siemens.com/mobility/presse/pressemitteilungen)

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The **Siemens Mobility Division** (Berlin) is the internationally leading provider of transportation and logistics solutions. With "Complete mobility", the Division is focused on networking the various modes of transportation in order to ensure the efficient and environmentally compatible transport of people and goods. "Complete mobility" targets the goal of sustainability and combines the company's competence in operations control systems for railways and traffic control systems for roadways together with solutions for airport and postal logistics, railway electrification, rolling stock for mass transit, regional and mainline services, as well as turnkey systems and forward-looking service concepts. With around 25,000 employees worldwide Siemens Mobility posted sales of EUR6.4 billion in fiscal year 2009 (ended September 30). [www.siemens.com/mobility](http://www.siemens.com/mobility)