



A world-first: The powertrain for the electric long-haul truck

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Nikola Motor Company and Bosch develop the commercial vehicle powertrain of the future

- ▶ Development partnership will bring to market fuel cell and commercial vehicle eAxle for Nikola class 8 hydrogen-electric truck
- ▶ Bosch offers automotive-grade hardware and software for aggressive launch schedule - production by 2021
- ▶ Electrification incubator: Bosch's expertise and portfolio help start-ups go from concept to execution

Salt Lake City, Stuttgart – Electrification is becoming bigger than you imagined. By 2021, Nikola (pronounced Neek-oh-la) Motor Company will bring to market the Nikola One and Two, a class 8 hydrogen-electric truck lineup that will deliver more than *1,000 horsepower and 2,000 ft. lbs. of torque* – nearly double the horsepower of any semi-truck on the road – all with “zero local emissions,” as previously announced by Nikola.

At the heart of the Nikola truck lineup is a new commercial vehicle powertrain achieved thanks to a development partnership between Nikola and Bosch. The organizations re-imagined the powertrain from the ground up. Bosch's eAxle expertise has enabled Nikola to move quickly on an aggressive path to bring its electric truck to market.

“Bosch is an incubator of electromobility solutions. No matter whether at established OEMs or start-ups, Bosch is accelerating development and helps achieve fast breakthroughs on the market,” said Dr. Markus Heyn, member of the Bosch board of management responsible for the Commercial Vehicle Organization.

“We have been aggressively pursuing our goal of bringing the most advanced semi-truck ever built to market,” said Nikola Founder and CEO Trevor Milton. “The powertrain requires an innovative and flexible partner able to adapt quickly to the speed of our team. Bosch has empowered us to come to market quickly with automotive-grade hardware and software so our vision can become a reality.”

The eAxle developed by Bosch is a scalable, modular platform with the motor, power electronics and transmission in one compact unit. This makes it suitable for vehicles of all kinds, from small passenger cars to light trucks. Nikola and Bosch will use this know-how to commercialize the world’s first true dual-motor commercial-vehicle eAxle for a long-haul truck.

The eAxle will use proven commercial vehicle electric machine technology and SMG (separate motor generator) motors from Bosch. The technology vision of Nikola and integration expertise from Bosch will enable the Nikola trucks to realize unprecedented targets for e-machine efficiency.

The eAxles will be paired with a custom-designed fuel cell system – also being developed jointly between Nikola and Bosch – designed to deliver benchmark vehicle range. The overall vehicle controls will also be jointly developed based upon Bosch’s vehicle control software and hardware. The Nikola Bosch zero local emission powertrain is designed to achieve segment-leading performance at a competitive total cost of ownership to traditional powertrains.

“Breakthrough mobility technology requires visionary targets, speed to-market and disciplined structure to ensure long-term success,” Heyn said. “Together with Nikola we are pushing ourselves to realize new levels of technological achievement and market penetration.”

Bosch and Nikola will also jointly develop the overall powertrain system for the Nikola lineup, which will include the safety concept and vehicle electrical architecture. By utilizing advanced simulation technologies throughout the whole development process, from system layout to testing and validation, the Nikola One and Two will launch with one of the most optimized and state-of-the-art system designs and vehicle controls in the mobility sector.

For complete product details on the Nikola lineup, visit www.nikolamotor.com.

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Mobility Solutions is the largest Bosch Group business sector. In 2016, its sales came to 43.9 billion euros, or 60 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector combines the group's expertise in three mobility domains – automation, electrification, and connectivity – and offers its customers integrated mobility solutions. Its main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 390,000 associates worldwide (as of December 31, 2016). The company generated sales of 73.1 billion euros in 2016. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to deliver innovations for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiaries and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At 120 locations across the globe, Bosch employs some 59,000 associates in research and development.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, www.twitter.com/BoschPresse.

About Nikola Motor Company

Nikola Motor Company designs and manufactures electric vehicles, vehicle components, energy storage systems, and electric vehicle drivetrains. NMC is led by its visionary CEO Trevor Milton (twitter: @nikolatrevor), who has assembled one of the most talented teams in the country to bring the Nikola products to market. The company is a privately-held Delaware corporation registered as Nikola Corporation. For more information, visit nikolamotor.com or Twitter: @nikolamotor.