

An electric drive system for the world's largest truck

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The world's biggest truck has an electric drive system. Four electric machines with 1,200 kilowatts each from Siemens help the 800 ton gigant moving. Recently, the first truck of the BelAZ 75710 series went into operation in a sibirian mine in the Kuzbass region. The truck is more than 20 meters long, 10 meters wide and has a height of 8 meters. It weighs 360 tons without load and can transport 450 tons of material. This amount is equal to the weight of a fully loaded Airbus A380.

The world's biggest truck is powered by an electric drive system consisting of four electric motors from Siemens, each with an output of 1,200 kilowatts (approximately 1,800 hp), that keep the more than 800-ton GVW vehicle moving on the road. The first BelAZ 75710 model recently began operating at a Siberian mine in the Kuzbass region of Russia. The truck is more than 20 meters long, almost ten meters wide, and eight meters high. It weighs 360 tons when empty and can transport around 450 tons of cargo, a volume that corresponds to a fully loaded Airbus A380 airplane.

The Siemens engineers who designed the drive system faced a major challenge, as the BelAZ truck manufacturer in Belarus wanted this to not only be the biggest truck in the world but also to

carry 25 percent more payload than the world's biggest dump truck at the time. Plans also called for a significant reduction of the cost per ton of transported material. The truck has a maximum speed of 64 kilometers per hour when empty.

Underground and open-pit mining companies face increasingly restrictive environmental protection regulations. These companies also want their transport vehicles to be available around the clock so that they can be as productive as possible. With this in mind, Siemens' traction-drive experts in Nuremberg developed a reliable and powerful all-wheel drive system that uses four [electric motors](#). The electricity is provided by two generators, each of which is driven by a 16-cylinder diesel engine with an output of approximately 1,700 kilowatts.

Eight tires - each of which can support 100 tons

Unlike previous models, the new truck was to be outfitted with eight tires, because each tire is designed to carry a load of only about 100 tons. An extensively tried and tested drive system was used as the basis of the new truck's drive system, and the engineers also developed a new type of control system. All of the components of the [electric drive](#) system came from Siemens. This ensured that all the elements would be compatible and would work together perfectly.

The all-wheel drive configuration offered the engineers new possibilities, such as dynamic traction distribution on both of the truck's axles. Moreover, if one of the electric motors were to fail, the truck would still have emergency drive capability, meaning that it could be driven to a service center under its own power - in other words, it wouldn't have to be towed and it wouldn't obstruct other vehicles. The four-wheel drive system and the four-wheel hydraulic steering system ensure that the tires, which are around four meters high, don't get stuck in rough terrain.

Siemens has been developing drive systems for dump trucks for about 20 years, always with the goal of finding ways to make these giants of the mines more efficient. Among the examples are the "trolley trucks," which get their electricity from overhead power lines. This innovation makes it possible for these trucks to almost double their speed, even on steep ramps.

Provided by Siemens

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