



## Launch of the Tembo 4x4 e-LV EVO2

The Tembo 4x4 e-LV EVO2 is the second edition of worlds' first zero emissions electric light vehicle for mining featuring a completely new drivetrain and energy management system. Frank Daams, CEO of FD 4x4 Centre: 'Using all the data and feedback collected during the testing phase we can offer a vehicle that is even more robust, smoother to drive and better suited to the conditions in the mining industry.'

February 21st, the new vehicle was unveiled at the headquarters of FD 4x4 Centre in Bergeijk, the Netherlands, in front of an international audience. Representatives of the mining industry, clients, suppliers and the staff who has worked to design and built this new vehicle were able to drive the vehicle and discuss the technical aspects of the vehicle.

The new drivetrain of the Tembo 4x4 e-LV has been designed to withstand the most difficult circumstances, with components certified for industrial use and readily available from reputable partners. 'Due to our thorough preparation the Tembo 4x4 e-LV now meets the criteria for the European Machine Directive 2006/42/EC, and full homologation as a new vehicle is in progress.'

Surrounded by Tembo 4x4 e-LV vehicles, Frank Daams explained each of the components of the electric drivetrain into detail. 'Together with our French partner Actia we have selected an electric motor that is in use all over Europe. The compact size allows for a high position between the chassis rails, and a custom full time 4WD gearbox transfers the power to the wheels.'

Power comes from an industry grade battery pack, certified to ECE R100 and contained within a solid metal box. Forsee Power is a renowned supplier of batteries for electric vehicles and one of the few companies able to offer the combination of quality and flexibility needed for the Tembo 4x4 e-LV. Depending on the usage-type more batteries can be added for increased range.

The on-board charger makes live for the operator as easy as possible, allowing the vehicle to be charged directly from the existing electrical infrastructure. Using engine braking the vehicle is able to charge its batteries, for instance on downhill sections into an underground mine. This allows for a range of between 60-80 km with the existing battery capacity on a full charge and is the exact range average range to cover one shift underground.

Vehicle management is done by an elaborate system, featuring a full can bus, telematics with remote access and a user- and maintenance friendly interface. 'The ECU is easy to access with a diagnostic tool and it can automatically share data with a server for maintenance and fleet management purposes. This simplifies maintenance on this already very simple and robust vehicle.'



The Tembo 4x4 e-LV is well received by the international audience present at the launch. Brian McKenna from Boliden Tara Mines Ireland was one of the test pilots of the first prototype and he is happy to see the development. 'It is a huge improvement over the first prototype. The engine power is more balanced and it is very quiet. I think the workshop will like the elevated drivetrain, it puts everything out of harms' way.'

Kim Falk is responsible for the workshop of Boliden Sweden and happy to test the vehicle. 'The car drives very smooth. We are anxious to see how it performs in the arctic conditions we have in our mine. It is well constructed and the people who work on it are open for our ideas and suggestions.'

For me reliability is most important in such a vehicle,' says Eve Tousignant of Access Canada. 'Our clients can bear with the charging time, but ideally it should be able to run 24/7. It drives fantastic and is a real solution to the problems we see in underground mining. We cannot wait to deliver the vehicles in Canada!'

'We designed the Tembo 4x4 e-LV to be an easy replacement of the regular pickups in the industry,' says Frank Daams. 'The electric motor is a big plus in terms of smoothness and driving pleasure, and due to the built in telematics the vehicles are easy to manage. In terms of usability and robustness the difference for the operator is minimal: the Tembo 4x4 e-LV performs and get the job done!'