

New generation Bell Large Trucks at Bauma 2016

Bell Equipment built on its successful world preview of its prototype B50E truck at Intermat 2015 by showcasing another model in the company's E-series Large Truck range at Bauma 2016, the B45E. With the global market creating increased demand for 45-ton trucks, the B45E with its rated payload of 41 000kg, a bin volume of 25m³ and a powerful new engine, has the potential to become the most popular model in the range due to its overall value proposition to customers.

The E-series Large Truck programme has been in development for three and a half years and is planned for worldwide release in late 2016. The range is powered by the new Mercedes Benz HDEP engine platform and optimised for off-highway use by MTU. Like their smaller truck counterparts they are also all fitted with Allison transmissions.

Comments Tristan du Pisanie, Bell Equipment's ADT Product Marketing Manager: "While new for us, the HDEP engine platform has been in production with Mercedes Benz for seven years. It is an engine that Mercedes Benz is very familiar with and we are confident that our customers will appreciate the advances in terms of fuel economy and power density over our D-series machines."

D-series vs E-series

When comparing the E-series Large Trucks to the outgoing D-series, all models have a useful increase in power with the new engine platform. The larger models also move to the Allison 4700 transmission which provides 7 gear ratios, to provide for better grade ability with reduced fuel consumption. Payloads have also increased.



After three and a half years of development, and following the textbook introduction of its E-series Small Trucks in 2013, Bell Equipment will commence production of its E-series Large Trucks towards the end of 2016. Representing this range at Bauma 2016 was the B45E with a rated payload of 41 000kg and a bin volume of 25m³.

All of the models up to and including the B45E are within 3 500mm width, which is a key number for European transport legislation. The B45D was a wider truck, which required a special transport permit in many European countries.

"The D-series has proven itself as the industry benchmark delivering the lowest cost per tonne of dirt hauled and a key requirement of the E-series Large Truck programme was to improve on this. During comparative testing between the B40E and the B40D it was found that, taking into account all of the variables, the B40E will deliver a 6% to 7% lower cost per tonne to Bell customers than the B40D. Similar improvements will be seen across the entire range and this will impact directly on our customers' profitability and ability to tender more competitively."

Transmission

"The move to a 7-speed Allison transmission across the range, with the exception of the B35E, effectively delivers better performance due to the smaller steps between gear ratios, which keeps the engine at optimum revs more consistently," says Tristan.

To accommodate the larger 7-speed transmission, Bell has removed the automatic retarder on the transmission and opted to rather incorporate this important feature into the wet brake system. Tristan explains: "The retardation is still operated automatically and the new position of the retardation will not adversely impact on brake life. This is because extensive testing has shown that at the low pressures generated in the brakes during retardation there is always oil between the wet brake plates, so there is no touching and wear."

Engines across the E-series Large Truck range incorporate a Jacobs engine brake, activated by an additional lobe on the camshaft, which is automatically engaged when the operator's foot is off the accelerator. "The retardation power of the Jacobs engine brake is higher than the engine braking produced by the outgoing V6 and V8 engines on the D-series trucks. The benefit is that a lot less retardation outside of the engine is required," says Tristan.

Axles

Traditionally in the Bell D-series range of ADTs the brake system and gears shared common oil in the axle. "This required a specialised oil because it's difficult to get a compromise between the oil needed for brakes and gears. In some of our remote markets this oil was difficult to source. With the E-series Large Trucks our engineers opted to use two separate commonly available and optimised oils for either brakes or gears in the axle. Not only have we been able to select the best suited oil in each instance but we have also introduced dedicated cooling, for the brake oil, across the range to improve system durability in heavy duty applications."

Cab

According to Tristan, Bell is making use of the E-series Small Truck cab for the Large Truck range due to the positive feedback that has been received from customers in terms of operation and ergonomics. Electronic bonnet opening has been added to the Large Truck cab as an additional, convenient feature.

The operator's experience has been a key focus area of the E-series truck programme with the objective of simplifying the interface and improving the ergonomics by taking into consideration the lifestyles of today's younger generation of operators.



The E-series Large Trucks, with the exception of the B50E, all have a width within 3 500mm, which is a key number for European transport legislation. The B45D was a wider truck, which required a special transport permit in many European countries.

“Smartphone technology is growing in popularity and we also wanted to build the familiarity of what happens in your car into what happens in our E-series trucks,” explains Tristan. Therefore the E-series cab has a full colour screen and an automotive mouse interface to control the sealed display unit. The Bell ADT is the first to offer this technology and the standard reversing camera can also be integrated into the colour screen display.

“Coinciding with our E-series Large Truck programme, we have even further improved the response speed of the colour monitors in the cab. This not only affects the new Large Trucks but can be achieved on all existing E-series machines with a software update,” says Tristan.

Bell opted for an Isringhausen seat, with its own suspension and dampening system, to improve ride comfort and reduce whole body vibration. The seat also has a three point safety harness which can be

configured, as an additional safety feature, so that the truck’s engine will only start once the seat harness is fastened. A heating option is also fitted for colder climates.

The full glass door, maximised window apertures and ideal operator position give unparalleled visibility. Safety blind spots are significantly reduced, particularly in the area commonly used for cabin access. “The Bell operator cabin has traditionally been one of the features most often praised by operators and the E upgrade makes the operator experience even better,” says Tristan.

“Overall we are confident that we have looked critically at what needed to be included in the upgrade, and focused only on delivering real value added improvements in terms of reduced cost per ton and safety, without compromising the platform that has served us so well for the last 15 years.”



The Bell E-series Large Truck range ticks all the boxes in terms of the improvement goals that engineers had set for the project. Importantly the E-series delivers an even lower cost per tonne of dirt moved than the D-series, which has until now been regarded as the industry benchmark. The trucks also deliver a useful increase in power thanks to a new engine platform and have achieved safety and operator comfort objectives as well.