Bell E-series takes ADTs into new era

Bell Equipment started the international market introduction of its latest E-series range of Articulated Dump Trucks at BAUMA 2013 in Germany in April. Incorporating latest developments in 6x6 technology, the smaller B25E and B30E will be the first to be launched and will continue to provide class leading power and weight-ratios, advanced engine and drivetrain characteristics, while setting new standards in safety, driver comfort and truck management.

According to Bell Group Chief Executive, Gary Bell, the E-series is a world class product of which all South Africans can be proud. He said: “Designed and manufactured here in South Africa, the Bell B30E showcases improvements Bell has made in the key areas of performance and fuel efficiency. We have also taken ADT functionality to new levels with customer-focused advancements and the highest level of automated machine protection. The all-new truck platform has been specifically engineered to handle future emissions requirements and take ADT innovation into the next era.”

Defining new standards on proven grounds

Fuel burn can contribute more than 40% of the operating cost on a site and has, therefore, always been a major focus area for Bell Equipment, especially in reacting to international emission restrictions schemes. In addition engine power and fuel consumption have been optimised on the E-series trucks through event dependant software that controls retardation, cooling and charging of accumulators.

Bell Equipment’s D-series platform, particularly for its larger ADTs, has continuously emerged as the best in class during its long lifetime due largely to the company’s evolutionary approach to design. The company has, therefore, opted to carry this platform through to the smaller trucks in the new E-series range by changing the front suspension on the smaller E-series trucks to an A-frame layout. “We’ve increased the suspension travel and the A-frame gives a more independent ride. In ride quality evaluations numerous operators have been unanimous in their approval and appreciation of the improvements achieved on the E-series,” commented Tristan du Pisanie, Bell Equipment’s B30E Project Manager.

In keeping with the practice of carrying through attributes from the larger Bell ADTs to the smaller trucks, the company has switched to Allison transmissions. Bell previously used Allison transmissions on the small C-series trucks and believes that the change offers improvement in performance due to greater efficiency. Importantly the change is in alignment with Bell Equipment’s single family design concept.

For improved safety and productivity the E-series has an automatically engaged Inter-axle Differential Lock (IDL) giving the vehicle full automatic traction control. A sensor on the inter-axle differential identifies when an axle loses traction and automatically engages the IDL function while the vehicle is still moving. “This feature is working so well that the diff lock button on the Sealed Switch Module (SSM) may soon become redundant,” says du Pisanie. In addition the B30E and B25E ADTs both have limited slip differentials in each axle so the cross locking of wheels is achieved automatically without any interaction from the operator.

Driver comfort = owner profit

According to du Pisanie, the operator’s experience has been a key focus area and various improvements to the cab and suspension performance have been made with this in mind. “We wanted to build on what we had achieved with our long-standing successful D-series by simplifying the interface and making the cab more ergonomic where possible. When we looked at how to improve the operator’s experience we took into consideration the lifestyles of today’s younger generation

With the E-series Bell Equipment’s engineers have carried through the A-frame suspension used on the larger ADT models to the smaller trucks in the range to increase suspension travel and deliver a more independent ride. The result? An unparalleled experience in terms of ride quality.

of operators. 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 du Pisanie.

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 been integrated into the colour screen display.

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.

Modern flowing lines, in keeping with the current styling trend on road vehicles, offer the operator unsurpassed levels of visibility while lights have been positioned higher up on the body where they will be less inclined to attract mud. Additionally all surface areas that could potentially come into contact with hazards on the job site now incorporate a rolled steel section for even higher durability. Safety systems and features, such as handrails and high visibility mirrors, have been styled into the project from the beginning so that the finished product is aesthetically pleasing and polished.

Advanced ADT Intelligence

"A lot of thought and testing has gone into the E-series design and the engineering team has had detailed interactions with customers, operators and the Bell Sales Team," says du Pisanie. "As a result the onboard diagnostics are more detailed and user friendly. The E-series truck can store up to 72 hours of machine operation and there are more proactive advance warnings for the hydraulic system. Another technological advancement is that a Bell Field Technician can plug the screen display onto his laptop and link with our Engineering team in Richards Bay so that they can see the screen display and see exactly what is going on with a truck anywhere in the world."

In line with the improved diagnostics, Bell Equipment's satellite fleet monitoring system, Fleetm@tic is also undergoing a major facelift with a new web application focusing on mapping utility so that Fleetm@tic is available on all multi-media including tablets, smartphones and PCs. The geofencing feature is to be reconfigured to increase vehicle safety by facilitating geofencing in multiple zones based on speed limitations related to load, inclination and site conditions. An additional feature will be a map tracking utility giving per minute tracking data.

Of course Bell Equipment's other ground-breaking innovations such as keyless ignition, HillAssist, Bin Tip Prevention, Auto Park Application (APA), standard Turbo Spin Protection and On-Board Weighing (OBW) are still standard on the E-series. OBW-Accuracy has been improved through the addition of an additional load cell to compensate for different loading styles.

Proven and tested concept

Bell Equipment's Head of Engineering, Pieter Goosen says that the E-series has been in development for the past five years and has undergone stringent durability testing, having enlisted reputable independent national and international test facilities for additional verification. Development has followed a well-structured process that has included an unprecedented level of customer interaction, concept vehicles and numerous prototypes to ensure a strong, reliable product. Extensive testing formed part of the process and engineers used structural analysis and dynamic analysis along with a rigorous testing programme on some of the harshest mine sites in the world to ensure that the E-series is worthy of taking the Bell marque forward.

"We are confident that with Bell Equipment's continuous development philosophy, the E-series platform will take us well into the next decade to further strengthen our pedigree as the ADT specialist," he said.

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The Bell E-series sets new standards in safety, driver comfort and truck management. Taking the driver experience to a new level is the Isringhausen seat with a three point safety harness, designed to improve ride comfort and reduce whole body vibration with its own suspension and dampening system. On the dashboard a full colour screen and an automotive mouse interface has been introduced to control the sealed display unit, which features more detailed and user-friendly onboard diagnostics.