TIMES have been hard for the major truck manufacturers with a number of major mining projects on hold, particularly pressurising the ultra-class market where the key contracts are relatively few and far between, compared to lower-capacity classes. The following details developments at Caterpillar and Liebherr, but also reveals for the first time BELAZ’s plans to roll out key models in North America.

Among the other manufacturers, namely Komatsu, Hitachi and Terex, there have also been some important developments. The first Komatsu 960E fleet is being commissioned at a Peabody coal operation in the US, following very successful testing of the truck at Rio Tinto’s Bingham Canyon mine. A future Mining Magazine article will examine the progress of the 960E in more detail. The new Terex MT6300AC fleet at Australia’s Sino Iron magnetite mine is operating well, and the company is pursuing opportunities for the industry’s newest ultra-class truck elsewhere.

Hitachi, whose EH5000ACII truck was mentioned earlier this year (MM, May 2009, p42), has now shipped 20 of its new EH3500ACII trucks, which are well spread out geographically: three are operating in Australia with contractor Comiskey, stripping overburden in a coal mine; two are operating in South Africa with Anglo Coal; four are in Finland at Talviivaara’s nickel mine; and four others are operating in the US with Massey Energy, stripping overburden at a coal operation. The remaining trucks are waiting to go into service.

The company states that the general feedback has been positive, with the drive system performing particularly well. Finally, the all-new EH4000ACII has a prototype still under test, with product approval due in December. The new truck is expected to be available commercially in January 2010, subject to board approval.

BELAZ ARRIVES IN NORTH AMERICA

In one of the most significant market-development decisions in the history of Belarussia-based truck manufacturer BELAZ, the company has chosen to introduce its trucks to North America. Although the firm makes more than 2,000 pieces of equipment per year for the mining, construction and specialised vehicle markets, the North American launch will focus on its new electric-drive mining trucks with 110-130t and 220t capacities. The BELAZ trucks will be marketed and service support will be provided by a new subsidiary, BELAZ Trucks Americas, which will be headquartered in West Bloomfield, Michigan.

Initial efforts will be directed at a group of selected customers where the advantages of the BELAZ trucks and the capabilities of the support network can be quickly demonstrated.

Semyon Brayman, president of BELAZ Trucks Americas, tells Mining Magazine: “We recognise that to penetrate the North American mining market we must offer trucks that use the latest technology to provide excellent productivity, and that we must construct a value package that includes attractive truck pricing, solid reliability and an optimised operating cost per tonne. We have strong products, we have a strong support network and we are excited to be able to bring BELAZ trucks to North America.”

Many in the industry who have not seen BELAZ trucks in action in its stronghold markets of Russia, China, Kazakhstan and Ukraine may wrongly consider them to be outdated. However, today’s latest BELAZ diesel-electric models are equipped with Cummins or MTU engines and General Electric drives, with a performance on a par with any other haul truck on the market.

Almost 1,000 of the latest-design mine trucks from BELAZ have accumulated over 10.3 million hours of

Following a series of important announcements of new models and upgrades from the leading haul-truck manufacturers in 2008, Paul Moore provides exclusive news of a major new market entry by BELAZ and an in-depth update on progress at three other established players.
operation in some of the world’s most demanding terrain. They are equipped with state-of-the-art technology, based on highly-engineered designs from the BELAZ technology centre, which has adapted components to customer needs.

The new North American models will be designated 75137NA (110-130t) and 75302NA (220t). The NA designation signifies that the basic advantages of the trucks have been enhanced with components and materials specifically for North America. Key areas of improvement include:

- Increased stability of movement while loaded
- Structural protection of vulnerable engine components
- A rear-axle design that minimises manual maintenance of brake gears
- A heated body designed for ease of loading, and high-efficiency electro-dynamic brakes
- The trucks also offer maintenance labour minimisation through optimal location of assemblies reduced lubrication points and the use of maintenance free materials.

The standard engine for the 75137NA will be the MTU Tier 2 12V4000, and on the 75302 it will be the MTU Tier 2 16V4000. Complete GE AC drive systems will be standard on both models. Aside from the reduced emissions and increased horsepower advantages of the engine, as well as the proven state-of-the-art drive technology, the parts and service for both are readily available from their numerous authorised outlets.

In addition, the BELAZ 320t 75600 truck has been developed and is operating in several locations in Russia. The current plans are that this truck will also be made available in the North American market when field experience and market conditions dictate.

Wider aftermarket support for the trucks will be provided by companies that have established personnel and infrastructure at, or near, target mine sites. Some of these companies already provide parts and service support for other products used in the mining industry.

The trucks will initially be assembled in Belarus and shipped to North America, but, at some point in the future, basic truck components may be fabricated and sent to North America where they will be combined with the engines, drive systems and perhaps other components now manufactured in the US.

CATERPILLAR MOVES FORWARD

In a statement in August, Caterpillar said it is moving rapidly forward with the new large mining trucks showcased at MINExpo 2008, which represent the company’s largest-ever investment in new mining technology. According to the company, the Caterpillar 793F and 797F mechanical-drive trucks, as well as the 795F AC electric-drive truck, are all achieving milestones.

Caterpillar states that it believes mechanical-drive mining trucks will satisfy the needs of the vast majority of mining operations, but as the only manufacturer of 181t and larger mining trucks with both mechanical and electric-drive systems, it will be able to offer trucks that “address all mining company preferences”.

At the time of the August announcement, the 793F and 797F had accumulated more than 75,000h of field testing, and proven their performance capabilities and durability. The new Caterpillar C175 engine that powers them had racked up 130,000h of field testing in mining trucks and more than 120,000h in power systems. Based on the success of these field-follow programmes, both models will be in full production and commercially available by the end of this year, with the 793F available first.

Caterpillar engine powers the 795F AC with 3,400hp. It also powers the 793F, with 2,650hp. According to Caterpillar, the C175 promises “longer life between rebuilds, lower sound levels, improved altitude capability and improved fuel consumption compared to the 3500 series engines it replaces”.

By the end of September there were five 793F field-follow trucks operating in US copper and gold mines. They have accumulated about 30,000h of operation and are said to be performing well. An additional four 793s have been retrofitted with C175-16 engines and the engines have accumulated more than 40,000h of running time.

Field-follow 797Fs have also performed very well at several application sites, including Powder River Basin coal, the Alberta oil sands and in a South American copper operation. Nine 797F field-follow trucks have accumulated a combined 50,000h of operation. In addition, three other 797s have been retrofitted with C175-20 engines and have accumulated more than 12,000h of operation.

According to Caterpillar, test results have shown the expected increased production when compared head-to-head with the previous 797B model and the C175 20-cylinder engine is said to have performed...
very well. While no commercial orders have officially been announced, several orders are in place, most notably from an operation in South America. As a brand new platform, the 795F AC incorporates new technologies throughout. An example is four-corner, blended braking and retarding using Caterpillar oil-immersed and cooled disc brakes, as well as electrical retarding, which enhances safety and operator confidence.

Caterpillar engineers have also been testing two 795F AC prototypes, including the truck shown at MINExpo, at the Tina Hills testing site in Arizona. The development programme has provided input for the construction of a new 795F AC in Decatur, Illinois. This new truck was recently shipped to a copper mine in North America where it will serve as the first field-follow 795F AC. The 313t-capacity 795F AC represents a new size class for Caterpillar, and, as a result, the primary focus of the Caterpillar AC electric programme has been on the 795F AC. Late 2010 is the likely commercial launch date, although tests at mine sites will influence the final decision.

The 795F AC development programme has now been suspended, largely due to the downturn in the world economy and because testing showed that the AC-drive model will not have an advantage in cost per tonne over the mechanical-drive model. Future input from customers who have a preference for electric-drive trucks will drive the decision on the restart of the 795F AC programme.

LIEBHERR MINING EQUIPMENT (LME)
2009 has been a year of highs and lows for Liebherr’s truck business, as it has for the whole large mining truck industry. Due to the economic downturn and its effect on the forward orderbook, the workforce at Newport News was reduced by 46 employees earlier this year. According to Liebherr, the workers were assisted with finding employment elsewhere, such as at the Northrop Grumman shipyard, also located in Newport News. The company tells Mining Magazine: “Highly trained and skilled welders that Liebherr utilises for frame fabrication are always welcome when looking to use their skills towards local shipbuilding.”

Despite this, Liebherr is continuing to ship models of its highly successful T282B 363t-capacity diesel-electric AC-drive truck. Recent order announcements have included news that Asarco’s Ray copper mine near Phoenix, Arizona, has purchased four new T282B trucks, boosting its fleet to 13 units. The 363t-payload trucks will be phased in as older and smaller-capacity haulage equipment is gradually taken out of operation. The new trucks are equipped with MTU 20V4000 diesel engines and Michelin 56/80R63 low-profile tyres. Liebherr is offering 24/7 technical support, a parts warehouse and an on-site office as part of its customer care package for Asarco, as well as an additional three service trucks to support the fleet.

Elsewhere, Liebherr announced that it is in the process of delivering seven T282B trucks to Codelco’s Radomiro Tomic mine by the end of this year. This open-pit mine produces oxidised copper ore at over 3,000m above sea level, some 1,670km north of Santiago, Chile. The order will take the total number of Liebherr trucks in the Codelco Norte Division to 48; 30 trucks are at Chuquicamata and 18 at Radomiro Tomic. There is a further order for 12 new T282B trucks, which will be shipped to BHP Billiton’s Mount Arthur Coal in Australia at the end of 2009 and into 2010.

Overall, the company says it believes the outlook for 2010 is promising with various projects coming online, including supplementing existing customer fleets with new trucks, but also developing and manufacturing prototype/pre-series models for mine site testing.

On this subject, the much-discussed TI 274, first shown in a prototype form at the Bauma 2007 show in Munich, is continuing mine-site testing and will have a second prototype unit shipped for placement in mine production towards the end of this year. Liebherr states that the product-development timeline at this point looks to 2011 for this truck to be commercially available. The standard TI 274 engine will be an MTU 16V4000 Tier 2, rated at 3,000hp, but it will also be available with a Cummins QSK60, rated at 2,850hp.

Terex MT6300AC, Sino Iron

Physically, the truck looks the same as the one presented in 2007, but, according to the company, there have been numerous developments from the testing process that have been incorporated into the design of both prototype trucks. Future test results will warrant additional improvements. But there remains significant interest.

Jonathan Baucom, product manager, mining trucks, at LME comments: “More and more customers are requesting information on the TI 274, wanting to run their own cost-per-tonne scenarios to compare truck options against the innovative low E/W and high-payload design that the model employs.”

Also on the horizon is the new generation of the T282, the T282C, which will replace the current T282B truck. Based on the product release date of the T282C and the number of orders at the time, the first trucks with Tier 2 engines may be delivered as early as the December quarter of 2010. The T282C will have an MTU Tier 2, 20V4000 engine, rated at 3,750hp, as standard.

Mr Baucom tells Mining Magazine: “A number of product enhancements have been made to the T282C from the original T282B. The main areas are: a new frame with more robust castings in high-stress areas; a new axle box with greater brake and wheel motor cooling, with improved service access; and the Liebherr drive system being incorporated into the new truck featuring Liebherr-designed and built control cabinet, cooling system, wheel motors and planetary gears.” A collision-avoidance package will also be an available option.

The firm adds that while the drive system, engine performance and payload rating are not designed to substantially improve truck performance, instead the focus of the T282C is achieving increased reliability and availability by vertically integrating truck components within the Liebherr group. This vertical integration of major components allows rapid design changes for safety, reliability and efficiency, as opposed to working with a third-party truck-component supplier where making such changes would be much more difficult.