

Aquacharge™

For the most difficult wet hole conditions

The Situation

Burton coal mine, operated under contract by Thiess, is a truck and shovel operation producing in excess of 4.5 million tonnes of coal per year from up to 3 pits at a time, with multi seams. Explosive loading rates are critical to achieving the mine's forecast output.

The mine uses 229mm blastholes up to 35 metres deep that may be collared up to 50m below the natural surface level. Standard pattern dimensions are 8m x 8.5m to achieve a powder factor in the range of 0.4 to 0.5 kg/bcm. Blasts may be over 30 rows wide and 30 echelons deep. As in most coal mines, blastholes may be slept for several weeks when loading large shots or to suit mine scheduling requirements.

The local stratigraphy and topography at Burton means that blasthole conditions are often wet and groundwater recharge rates can be high.



Figure 1: Typical Stratigraphy at Burton

Technical Solutions

To maintain loading rates, top loading of bulk explosives into dewatered holes is preferred over pumping explosives into wet holes. The geometry of blasts at Burton often dictates that blasts are centre-fired without direct access to a free face.

To maintain good diggability it is recognised that more energy is required at the toe of the blastholes, with less required towards the collar. To achieve this it is beneficial to use a high-density toe charge, with a lower density explosive near the collar.

Aquacharge™ is a robust, gassed emulsion based product designed for use in the most demanding wet ground applications. It provides superior water resistance to conventional top-loaded heavy ANFO

products, while maintaining good sensitivity. The ability to achieve variable in-hole density provides more energy at the toe of the blasthole, where it is required.

The Results

Aquacharge™ meets the challenging loading conditions and blast geometry at Burton by providing excellent water resistance and variable in-hole density. It is used in combination with conventional ANFO and Heavy ANFO products to provide a tailored charge combination to suit the particular loading conditions encountered in each shot. Since 2004 over 13,000t has been used in more than 60 blasts and 28,000 blastholes.

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