BROONS’ ‘SQUARE’ IMPACT ROLLER SOLVES ENVIRONMENTAL PROBLEMS ON WASTE DUMPS

Broons’ ‘Square’ Impact Roller is a proven performer when it comes to minimising tyre damage on mine sites, but its primary use has always been deep compaction.

Compaction of capping layers on waste dumps is one of several main applications for which the Impact Roller has proven to be both productive and cost effective. For close to 40 years, Broons has been using their specialist equipment to fulfil the compaction needs of their mining clients around the globe.

"Improving tyre life using our ‘Square’ Impact Roller remains a strong focus for our team, but we’ve been providing unique solutions to compaction problems on mines since we opened our doors in 1973 and we haven’t looked back since we introduced the revolutionary ‘Square’ Impact Roller for deep in-situ compaction in the 1980s,” said Stuart Bowes, Company Director.

Capping layers are typically used to reduce the likelihood of spontaneous combustion coal waste and overburden or the infiltration of surface water through mine waste that can lead to environmental problems with drainage and runoff. Water infiltration and/or the convective transport of oxygen into a dump can be reduced to very low levels by constructing a low permeability compacted cover over the dump. Trials and ongoing use have shown that by placing around one metre of inert material over the waste and then compacting with Broons ‘Square’ Impact Roller will pay dividends.

Studies undertaken by Dr Mark Jaksa and Brendan Scott of the School of Civil, Environmental and Mining Engineering at the University of Adelaide have also shown that by using a single thicker capping layer greater recycling of mine spoil materials can be used without the need to screen out large quantities of oversized materials.

Deep fills have traditionally been undertaken by compacting soil in thin layers using relatively small sized material placed in a highly controlled manner. While conventional rollers can satisfactorily compact fill in layers up to 400mm thickness, studies at mine sites have shown that the ‘Square’ Impact Roller can typically achieve thick-lift compaction in layers of 500-1500mm, depending on the material composition and the number of passes of the Impact Roller.

With just 6-10 passes of the Impact Roller applied on the surface, improvement in density can occur to at least one metre. 30-40 passes can result in significant improvement down to 2 metres and beyond in some materials.
Towed by a 270-330hp tractor the 1.3 metre wide 8 tonne (BH-1300MS) and 1.95 metre wide 12 tonne (BH-1950MS) modules quickly compacts the capping layer and solves potential environmental issues.

Broons can be contacted on (08) 8268 1988 or info@broons.com to further explain how companies can benefit from the use of this unique technology.