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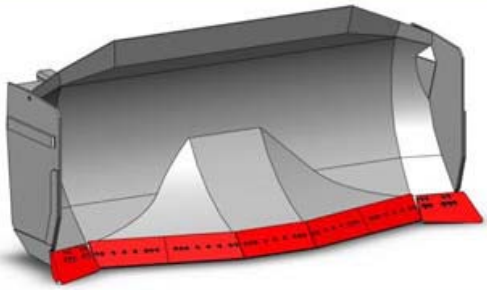
ACARP MATTERS

NEW DOZER BLADE DELIVERS PRODUCTIVITY GAINS



An innovative blade design is delivering major productivity gains for mining contractors in their dozer push operations.

The Spade Blade™, developed by David Hall of 3D Data Guidance and manufactured by Gessner Industries, has achieved 30 per cent higher production than the standard universal blade in an independent comparative study. The universal blade has a 'U' shape with forward facing wings that hold dirt from flowing out the ends of the blade, which makes it efficient for moving big loads over a long distance. However, it does not excel in difficult operating conditions and is more suited to lighter or easy-to-doze material.

The initial concept for the Spade Blade™ was developed and demonstrated as part of an ACARP project and is another example of industry-funded research leading to a commercial product.

The objectives of this project were to design, build and test a high production dozer blade that would increase payload filling and reliability, and reduce costs of dozing operations in cross pit, rehabilitation and bulk earthworks; achieve a higher percentage of full-blade pushes; reduce fuel consumption and costs; and reduce cycle times and wear through centralising blade penetration pressures, a full blade on roll back and carry cycle, and the utilisation of power through both tracks.

The prototype blade was evaluated in a series of on-site trials commencing at Blackwater in July 2005. Operator feedback indicated that the blade was easy to load, it loaded in less than the length of the dozer, it was easy to push once loaded, it carried more than a full universal blade, it dug into material that would require ripping for other blades, and it was very easy to control. The second trial at Millmerran using Downer EDI Mining's two D11R dozers provided a good indication of the blade's ability to dig directly into the hard material, which had several metres of topsoil and hard clay grading into sandstone. The stone increased in hardness with depth and lay in sheets opposed to the direction of digging.

David Hall said the Spade Blade™ used a unique patented design.

"The centre section of the blade design penetrates the ground and the dirt flows away from the centre leaving the forward cutting edge free to dig and load the blade to capacity. This dramatically reduces the amount of ripping required, improving wear resistance and increasing fuel efficiency," he said.

"Other blades flow the dirt up against the blade skin in a rolling action which uses energy and causes wear on the blade skins. It also means the dozer has to push a greater amount of material which is in contact with the ground."

Spade-nosed rock buckets are commonly used on loader and excavators in hard conditions.

Mining contractors Thiess and the Wolff Group are already using the Spade Blade™, with deliveries scheduled to Macmahon and Rio Tinto.

Thiess Australia Technical Services Mining Manager Ben Willey said the blade design increased productivity, reduced operating costs and provided more options for strip mining overburden removal.

"We are planning to roll out the blade to other Thiess mine sites in the near future," he said.

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