

The optimisation of blasting efficiency was the focus of an industrial trial at the Mercedes-Benz factory in Mannheim - with considerable success

Reduced wear and tear and blasting time reduction through innovative premium blasting media

A report by Vadim Malashonak, regional sales manager at WINOA Germany

It all began with a vision: an innovative blasting media with high energy transfer capabilities and a wear reducing feature for the wheelblasting machines in a foundry application.

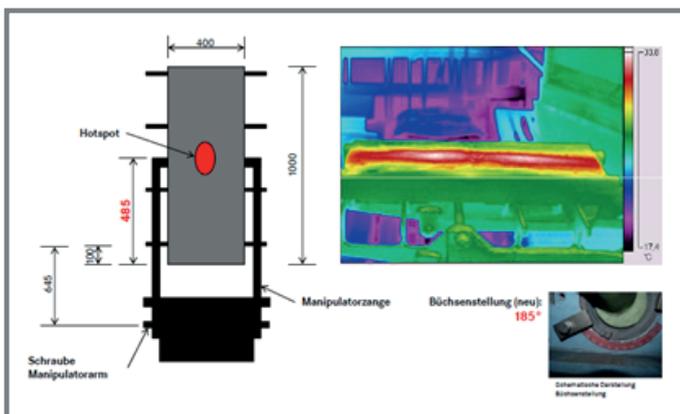
Following a long development period, the new product, Hybrid Shot, was introduced by the R&D department of Winoa, for the purpose of trials with Daimler JSC. In order to meet the high quality requirements of the customer's cylinder head bodies and to extinguish all doubts, a principle experiment was performed in Schaffhausen with the blasting machine manufacturer Wheelabrator. The calculated blasting times, the wear performance and the achieved quality paved the way for industrial testing quickly.

Optimising quality, increasing efficiency - a success story

Winoa, a world leader in the manufacturing of steel abrasives, with 14 factories and six technical and training centres across the world, was so convinced by the results achieved with Hybrid Shot during the initial trials, that even a WA COST - a cost reduction calculation taking into consideration all costs in the blasting process i.e. energy, blasting agents, personnel, maintenance and other additional aspects - was created and the global blasting cost savings were guaranteed.

According to the definition of the large scale test sequence and the exact objectives, economic benefits were the main purpose of the project.

Under consideration of the correct procedures with such experiments, which Winoa describes as 'the seven stages of success' (as a global standard), nothing stood in the way of a successful conversion any longer. With the beginning of the testing of the Hybrid Shot and the training of the operational staff, regular inspection and verification of the operating mixture in the test blasting facility were at all times guaranteed by the support of the technical WALUE department. The accurate angle of the blast wheels could be set more exactly with the use of the revolutionary blasting image adjustment method, which involves the use of a thermal imaging camera (shown below).



A shot of the sheet with a thermal imaging camera, the corresponding box position of the centrifugal wheel and the schematic representation of the hotspot

During the assessment, the roughness measurements in particular proved to be impressive.

The difference of the surface following blasting with high carbon content blasting media (compared to low carbon content ones) showed considerably less roughness; this yielded a positive effect in the follow-up process of the painting system. The 3D surfaces method also showed nothing to be doubtful about - the roughness values became lower and more constant with the Hybrid Shot.

So what has improved? And how were such improvements achieved? The premium product has a slightly more aggressive particle shape and a higher rebound effect. These characteristics contributed to the fact that the efficiency of the cleaning of the engine block became comparable after the casting; meanwhile, the blasting times for them were able to be reduced by up to 15 per cent, and the blade wear by up to 40 per cent. This finding lies in contrast to conventional expert opinions, according to which the wear of blasting equipment will increase after a



switch from low carbon content blasting to high carbon content blasting methods. This is new and revolutionary in the professional world - with the help of the Hybrid Shot and the blasting system parameter's optimisations, the greatest saving potential in the analysis was found in the area of wear reduction. The guaranteed total cost savings at three blasting facilities were even exceeded by approximately 20 per cent. During a repeated analysis, the saving potential was confirmed. This means that the increase in productivity, which would be made conceivable as a result of the blasting time reduction with the new premium product, was still yet to be taken into account during the assessment.

Although the industrial trial with Hybrid Shot was officially reported as completed, the intensive support of the Winoa staff extends further than this. The Winoa machine inspection reports aim to indicate the current status and performance of the blasting equipment, so that, in the event of any deviations, adaptations may be made in collaboration with the Daimler staff.

Daimler Inc in Mannheim
The Daimler AG factory premises in Mannheim include the Mercedes-Benz motor factory with an iron foundry, and the EvoBus factory.