

LoadMetrics™ & Arm Geometry System

A Dynamic Arm Geometry, Digging Force, and Payload Monitoring System



Bucket-by-bucket payload monitoring



Operator oriented information



Prevent haul truck overloading



Real-time graphical user interface

BUCKET-BY-BUCKET PAYLOAD MONITORING

Dynamic payload monitoring allows the bucket-by-bucket payload of large hydraulic shovels and excavators to be calculated in real-time and displayed in a user-friendly graphical interface. The LoadMetrics™ solution accurately senses the shovel payload with an average error of less than 2.5% and displays it together with the accumulated payload on the truck. The payload data is most useful for the shovel operator to avoid overloading which causes damage to the equipment, the haul truck and its tires. It is also useful in assisting the shovel operator to prevent under-loading which results in efficient use of the mining equipment. Haul truck loading can be optimized, and production efficiency can be increased.

HIGH-PRECISION BUCKET POSITIONING

With the Arm Geometry System (AGS), the shovel joint angles are sensed in real-time using high-precision, 3D orientation sensors. The bucket position is then estimated with an accuracy of better than 5 cm, relative to the shovel cab, for large mining shovels. The shovel geometry is instantly displayed on a computer generated shovel model. This information can be used in combination with the mine dispatch system to provide the precise location of the material being dug and for updating the bench layout.

DIGGING FORCE MONITORING

Digging force monitoring is available as an optional feature. With this feature, an arrow displays the direction of the force being applied by the shovel bucket and a graph indicates the magnitude of the force to the operator visually. This is very useful in training new operators and to avoid overstressing the shovel components. It can also be used to determine density of the mined material to evaluate the blast efficiency.

CYLINDER LIMIT INDICATION

When nearing the shovel cylinder extension or retraction limits, the color of each cylinder, displayed on the touch screen monitor, changes to orange. This provides the operator with a visual warning and serves to extend the lifetime of the shovel.

