



# Stone Three

The Future of Work. Now.

## Truck Volume Analyser

Stone Three introduces its latest deep learning based Truck Volume Analyser offering improved accuracy. The Stone Three Truck Volume system is a reliable and robust machine vision-based system used to measure the volume and tonnage of bulk material such as mineral ore haul trucks. This system makes use of the latest industrial high-resolution and wide dynamic range camera and laser technology for superior accuracy and robustness.

### Key Benefits

The system automatically identifies and scans each truck to provide high accuracy data on the ore received and has the following benefits:

- It is automated, real-time and statistically representative.
- High accuracy volumetric measurement. Inferred tonnage using bulk density factor.
- Detection of overloading and uneven loading to avoid fleet damage and increased maintenance cycles
- Detection of underloading to avoid suboptimal fleet utilisation
- Ideal for totalising material received during a period (shift, day, week, month) and comparing with mining plan or fleet contractor obligation
- More cost effective than truck load cells, simplified calibration
- The machine vision based measurement is non-contact and therefore robust and low maintenance.



## Machine Learning and Vision Performance

Stone Three now utilizes the latest deep learning detection technology. This allows for automatic identification of different truck types, e.g. Cat 777 vs Komatsu 785 and accurate detection of the truck bucket. The deep learning models are robust against the presence of sunlight and shadows on the imaging area. Machine vision technology is used for detailed truck motion tracking to compensate for non-linear motion, e.g. curved parking at crusher.

## Capabilities

The Stone Three system scans the truck as it moves underneath the system. A high resolution 3D point cloud is constructed by combining the depth profiles from a line scanning laser with the velocity tracking measurements from the camera data. Each truck type is uniquely identified so that the 3D model can be compared with the empty 3D model of that truck type in order to calculate the payload volume. Tonnage is inferred using a bulk density factor.

High resolution cameras with wide dynamic range capabilities are used for robustness against varying outdoor lighting

conditions and high intensity floodlights enables high quality images during night time. The data is made available for integration into the client's SCADA, historian and control systems using industry standard protocols such as OPC.

## Health Monitoring

Stone Three continuously monitors system health for sensor issues with communication, camera or light equipment. Server health monitoring includes disk space, CPU usage, Memory usage, and OPC health monitoring.

## Technical Support

Stone Three places significant emphasis on timely, consistent and accurate technical support and has developed reliable and cost-effective systems to achieve this objective. Stone Three supplies a comprehensive technical support plan as part of their value adding service. Technical support includes remote support and routine site inspections. Weekly reports are sent to the client detailing system uptime, OPC health and PSD performance indicators.

