Accurate payload information to optimise mine performance

LOADSCAN®
accurate payload measurement

Lower cost-per-tonne of material hauled, optimised truck loading, improved productivity and increased profits.

Loadscan's Advanced Mining Solutions are satisfying growing global demand for reliable and accurate load measurement across a range of increasingly challenging surface and underground mining operations.

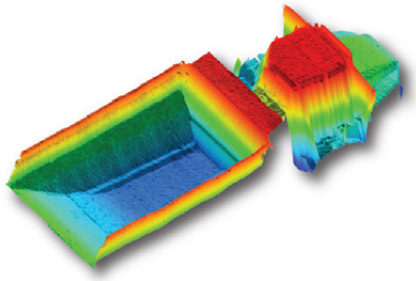
What is load volume scanning?

The Loadscan Load Volume Scanner (LVS) system utilises eye-safe laser scanning technology combined with proprietary Loadscan software to measure the exact volume of material loaded into a truck bin. With the LVS system you'll measure actual volume, not a converted weight estimate.

By accurately calculating net volumes delivered for processing you can eliminate arguments over tonnes delivered by the haulage contractor or haulage department to the mill. It also enables you to optimise loading for maximum asset utilisation.

A 3D scan image of every load is generated, providing an audit trail and visual record of loading. Customers have found this extremely helpful when training and coaching their operators.

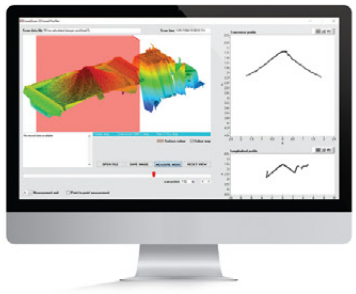
How the LVS system works



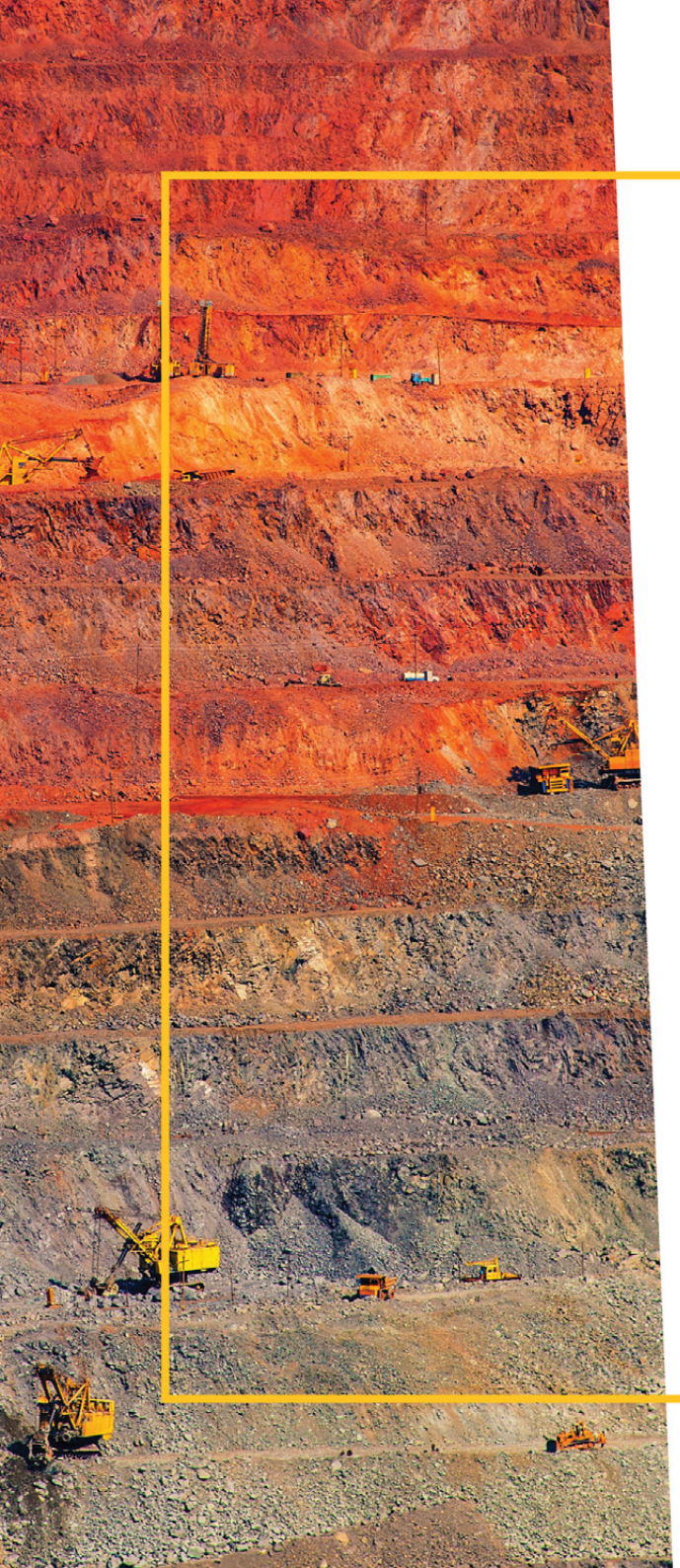
Empty truck is scanned to create reference scan in the database

Trucks can be tracked manually or fitted with RFID tags for automatic identification

Trucks are scanned by driving below an elevated scan head, which can be mounted on a pole, gantry, or underground mine portal. The scanning process is fully automated



Proprietary Loadscan mining software reports volumetric measurement, including 3D load profiles of every load



A typical load volume scanning system

System visual is indicative only and not to scale. Final system specification may vary.

Convenient scanner system options

Loadscan offers a range of scanner options to suit your business requirements.

Block Mounted Fixed LVS-3BMF (Outrigger)

- For permanent locations
- Flexible cabling/component layout to suit site-specific permanent installation requirements
- Hardwired to office for weather-protected access

Custom-Mounted LVS-3CMX

- Universal mounting bracket
- Underground mine portal or tunnel
- Custom mounting for large dumpers

Block Mounted Portable LVS-3BMP

- For long-term projects or fixed locations
- Built in kiosk option
- Portable (fork-slots and lifting points provided)

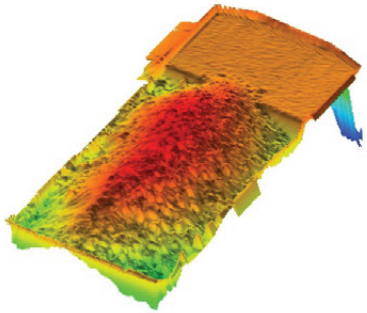
Trailer Mounted Mobile LVS-3TMM

- For short-term projects or multiple locations
- Self-contained and towable

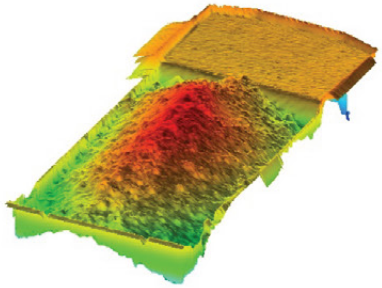
All systems include RFID tag reader, LVS measurement software and Overview reporting software

Underloading could be costing you a fortune!

Underloading requires additional truck movements to shift the same amount of material, reducing profitability. We help mines to optimise loading by maximising every load, thereby increasing trucking factors and improving profits. Our load scanner accurately measures all loads and automatically generates 3D scan images that clearly indicate underloading, enabling corrective action (including operator training and coaching) to be taken.



Loaded to capacity
90.4 tonne payload = 50.2m^3
= 11,062 truck loads



Slightly underloaded
78 tonne payload = 43.3m^3
= 12,821 truck loads

Underloading requires 1,759 additional truck loads

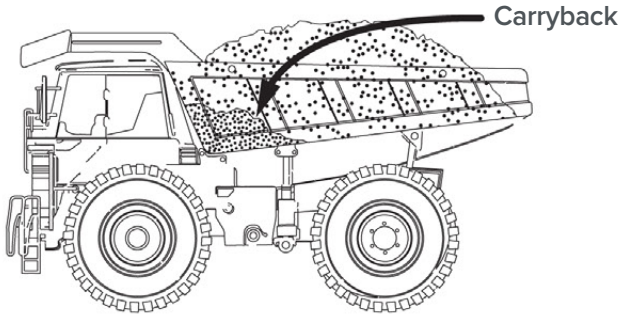
An example of CAT777 to shift 1,000,000 tonne material
(Based on density factor of 1.8)

"Loadscan has been helpful to improve operational performance by managing carryback to reveal our true shift tally. We can now accurately calculate net volumes delivered for processing. Time is also saved by minimizing paperwork, there's no manual data entry, driver records or after-shift record sorting."

Pavan Kaushik — Vice President, Hindustan Zinc

Managing carryback to improve operations

Carryback is a common problem wherever material is being shifted and can seriously impact productivity. By scanning all loads with the Loadscan LVS, carryback out of the mine is accounted for and can be deducted from shift tallies, improving accuracy of actual loads shifted. In addition, carryback can be identified through data shown on the message board and quickly removed from the bin.



LED message boards indicate amount of material left in bin. Once set threshold is exceeded, the driver can have the bin scraped to remove carryback.

API
data sync

RFID
tracking

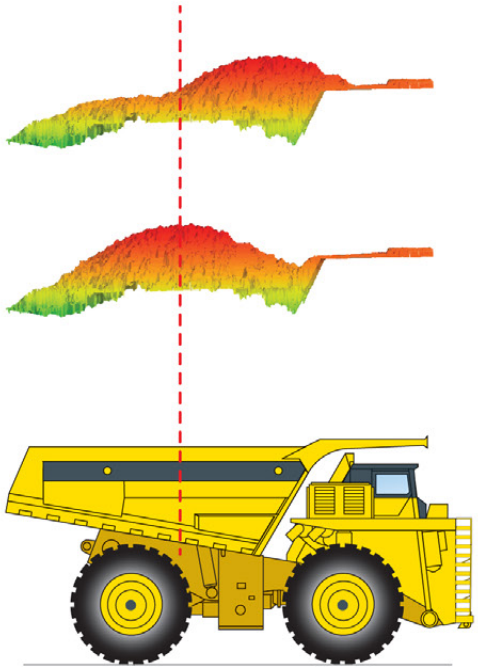
+/-1%
accuracy

3D
scan images

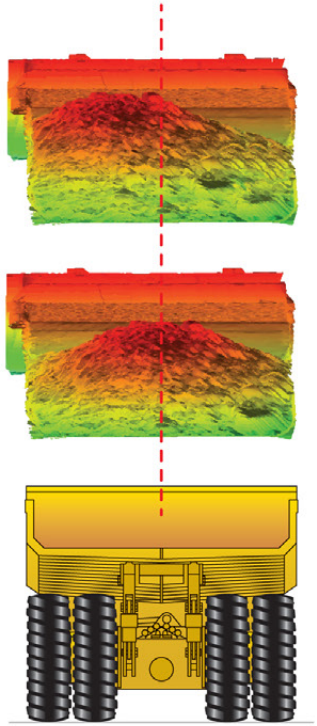
The hidden costs of off-centre loading

Off-centre loading can substantially increase operating costs. Uneven load distribution adds stress to truck components, reducing their working life and adding substantial costs to your operation. In addition, this can create excessive tyre wear, voiding warranties and requiring premature replacement.

The 3D scans generated by the system provide a valuable visual reference that can be used for training and coaching loader operators.



Front/Rear axle distribution



Left/Right side bias

Measuring truck payloads by weight or volume

Does it really matter which method you use? We think it does.

Common weighing systems are not the complete measurement solution

- Doesn't account for bulk density changes, nor enables density changes to be accurately tracked.
- Usually require frequent (and costly) maintenance and calibration.
- Large trucks must stop and settle on static weighbridges to register accurate weight. As a result, 1 to 2 loads per shift per truck could be lost = higher cost per tonne hauled.
- Dynamic weighing systems are susceptible to heavy trucks moving the scale's foundations, causing inaccurate measurements (scale motion can reduce accuracy by 3-5% or worse).
- Onboard weighing systems (which are very sensitive to calibration issues) require a system on every truck, dramatically increasing costs.

Limitations and shortcomings of weight measurement

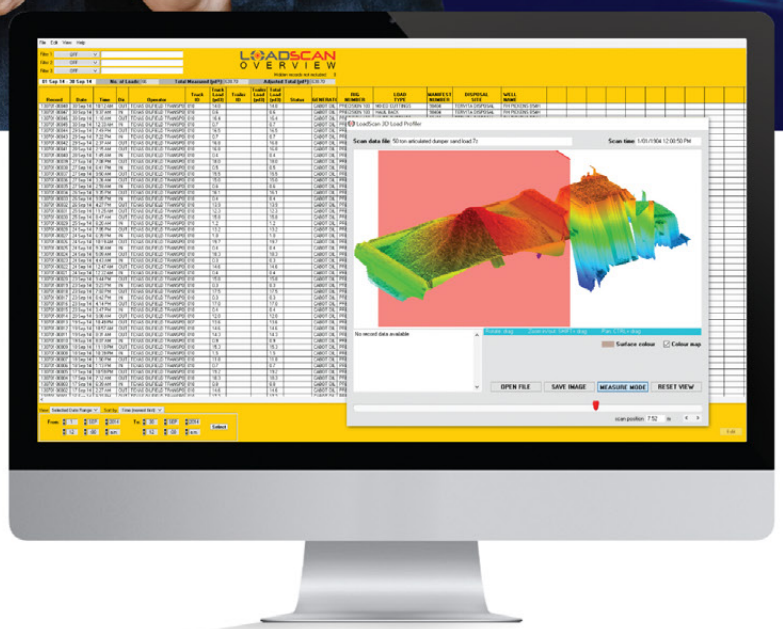
- Density of material can vary depending on which part of the rockface the ore is extracted from, and how the bucket is loaded.
- Conversion factors typically computed under carefully controlled conditions — don't necessarily reflect accurate actual weight-to-volume ratios of materials.
- Moisture can influence the composition of load materials, and consequently its weight.

Volume scanning substantially enhances the accuracy of payload measurement...

- Volume scanning is complementary to measuring weight with scales. By combining weight AND volume, measuring material bulk densities and payloads is more accurate.
- Converting from volume back to weight using bulk density factors has proven more accurate than using onboard or dynamic weighing systems.
- Measure ACTUAL load volumes in a truck or trailer bin, regardless of theoretical capacity.

Volume scanning delivers extensive benefits for mines

- Easily identify and correct underloading to increase profitability
- Improve loader operator performance and optimise trucking factors
- Measure actual volume, not a converted weight estimate
- Measure and account for carryback
- Remove discrepancies between quantities hauled and mill processing data
- Account for every load delivered or removed from site
- Gain a better understanding of bulking and compaction factors
- Improve ore body knowledge with volumetric as well as mass data
- Automatically track truck arrival and departure times
- Eliminate hand-written load dockets & manual docket processing
- Proven accurate to +/- 1% (and certified for Trade in NZ and Australia)
- No significant maintenance costs or recalibration required



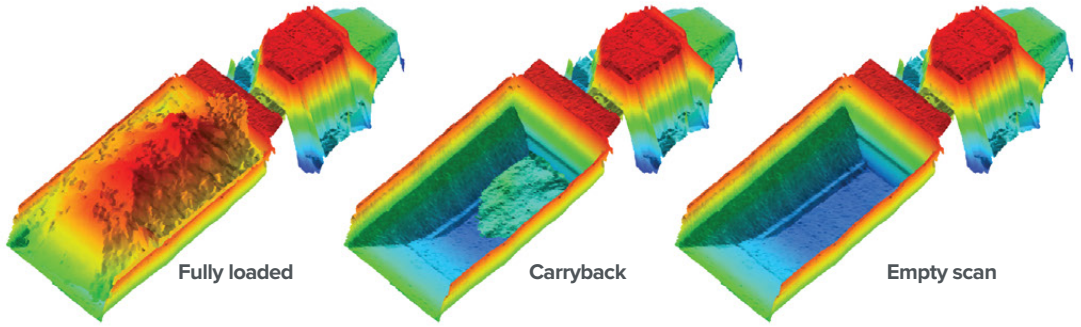
OVERVIEW™

Information for complete control

Every load record is stored in the system and connected to your desktop by LAN, WiFi or Cellular network. Data is viewed and sorted using our proprietary reporting software *Overview* and can be exported to Microsoft Excel, or imported to existing business systems.

Live data for optimised production

- Accurate measurable information you can trust
- Real-time production data for informed decision-making
- Assess haulage KPI's for enhanced production control
- Remove discrepancies between quantities hauled and mill processing data



Use automatically generated 3D scan images of loaded trucks to educate loader operators to consistently load trucks to capacity

Accuracy starts at the laser scan head

The scan engine is the heart of our volume scanning systems. Using safe Lidar technology, the range finder lasers in our LVS systems are the highest specification available, and the only lasers on the market that have passed the stringent metrological and accuracy testing required for trade approval*.

Accurate scanning alone doesn't guarantee accurate data!

Only when you combine it with our proprietary algorithms do you get reliably accurate measurement data that enables you to make confident business decisions.

LOADTRAK™

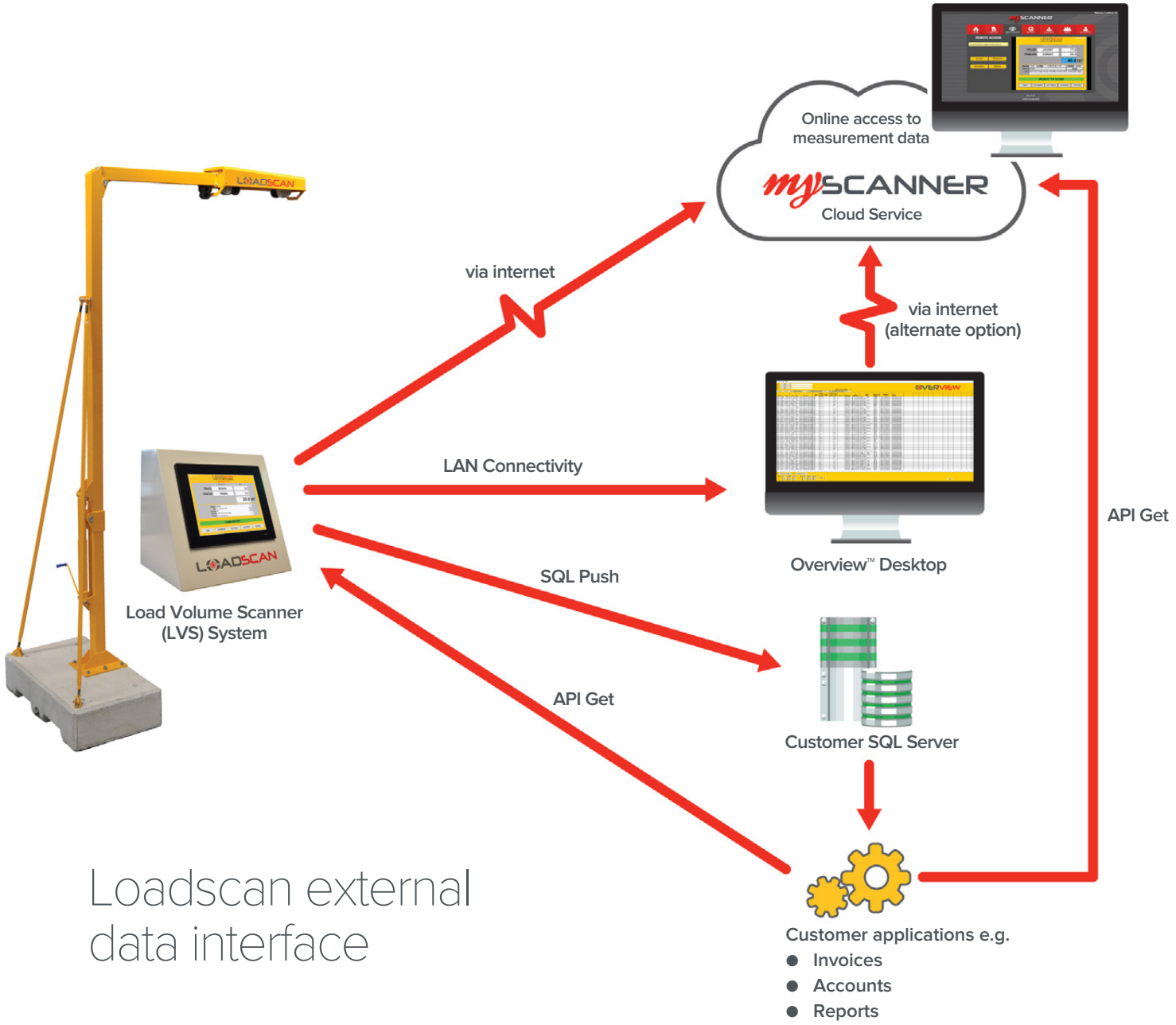
- In-cab touch screen console allows driver to enter load details such as:
  - *load source*
  - *material type*
  - *delivery destination*
- Automatically uploads to LVS during scanning via WiFi
- All load data is instantly available for analysis and reporting using *Overview* reporting software
- Up to six customisable fields for load reporting

GLOBAL
support via
phone or email

SECURE
customer web portal
(annual subscription)

REMOTE
online access to
scanner & load data

UPDATES
routine software
updates included



Loadscan external data interface

We're obsessed with accuracy!

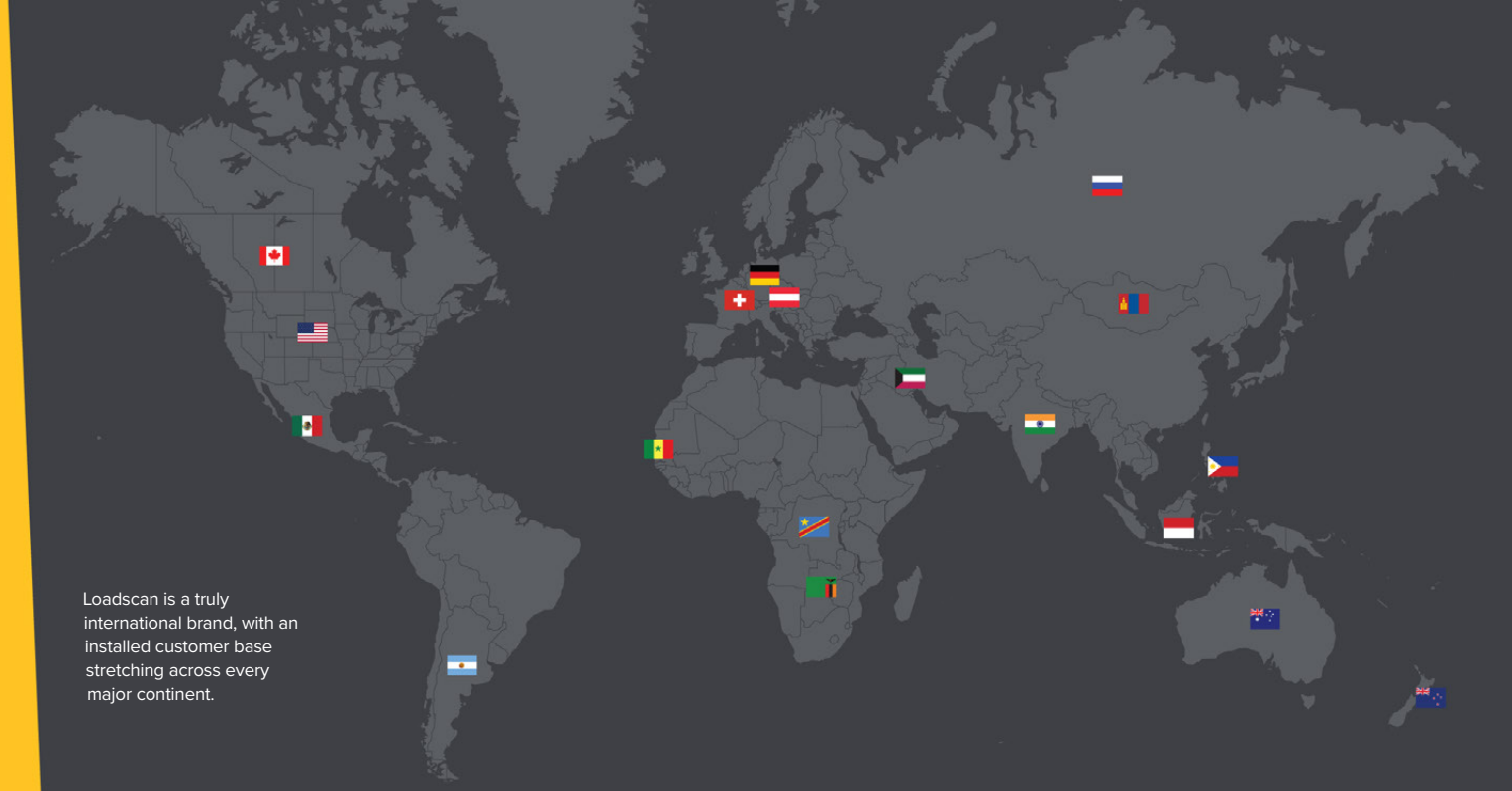
Our business is about improving the profitability of our global customers across the mining, civil, bark and mulch industries.

Over 20 years ago we invented and patented the original load volume scanner, and since then we've been the market leader in providing certified accurate and reliable load information. In fact, we are the only volumetric scanning manufacturer with internationally recognised Weights and Measurement Certifications. It ensures that when we measure your load you can be confident it's absolutely accurate to +/-1%. **It's your guarantee of peace of mind.**

Our advanced volume scanning and measurement systems provide the detailed insights necessary for you to optimise your production loading and throughput. Loadscan technology is enabling substantially improved operational and financial performance for forward-thinking companies across the world. **We've sold our systems globally into over 20 countries, and that's growing fast!**

If you have loads to be measured, no matter where you are, you can rely on Loadscan. **Because no-one does it more accurately than us.**

Contact us today to find out how we can transform your operational performance.



Loadscan is a truly international brand, with an installed customer base stretching across every major continent.

In 2020 Loadscan invested in a new purpose-built head office and assembly facility in Hamilton, New Zealand.

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*Loadscan® is the only company worldwide to have achieved trade certification approval for truck volume measurements with a load volume scanning system. Our LVS system performs to the same accuracy as per Trade Approval Certificate 1556 (MAPPS NZ) and pattern approval Certificate 13/1/15 (NMI AUS). Loadscan systems are sold as 'monitor only' outside New Zealand and Australia but still perform to the same high tested accuracies.

Authorised Agent

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