



CASE STUDY

Application Background

Commodity:	Iron Ore/Overburden
Digging Conditions:	Hard/Moderate
Machine:	Backhoe
Make & Model:	Liebherr 996, 996B, R9400
Customer/Site:	Pilbara, Western Australia
Installation Date:	2018-2019

Challenges

This study focuses on an Australian tier one miner based in the Pilbara operating a fleet of backhoe excavators and autonomous trucks in iron ore and waste materials. Maximizing truck payload across the fleet was high priority to the production management team. Although the miner was running the latest fleet management systems, the number of truck overloads recorded daily was identified as a bottleneck to production. Excavator operators did not have the confidence to target high capacity loads using weights reported by truck payload systems due to variable accuracy and latency. The challenge was to provide an accurate real-time truck payload tool so that operators could increase average truck payloads and maximize productivity without increasing overloads.

The Solution

CR Digital’s experienced field technicians worked with the Miner to install the Titan 3330™ Load Haul Optimization system on the fleet of Liebherr backhoes. Titan 3330 is specifically designed to enable accurate truck loading, while minimizing truck overloads by providing real-time, pass-by-pass feedback to operators. Sensors fitted on the excavator identify individual bucket cycle and truck payloads. A running summary of each truck and bucket payload is reported live on the Titan 3330™ user interface.

Operator training on the intuitive Titan 3330™ system was rolled out once the product was installed and commissioned. Data reporting tools were provided to the customer to observe the impact of the system.

Location



The Solution



Titan 3330 Load Haul Optimisation

The Outcome



Truck Average Payload Increase



Productivity Increase

Titan 3330™ User Interface

Operators can see remaining truck payload in real time

Truck identification using RFID technology



Operators can see tonnes per bucket as they dig

Figure 1 – Example of Titan interface used by excavator operators

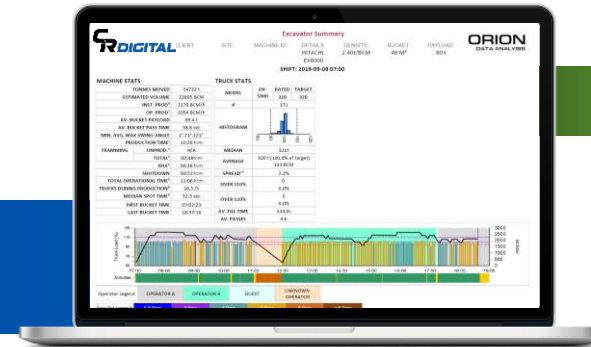
CASE STUDY *(Continued)*

The Impact

The CR Digital Titan 3330™ Load Haul Optimization system delivered:

- **3 tonne increase to average truck payload**
- **1% decrease in overloaded/derated trucks**
- **245,000 additional tonnes moved per machine per year**

With Titan 3330™ - operators were able to increase average truck payload while decreasing truck overloads – maximizing productivity.



ORION

Figure 2 – Orion Data Analysis reporting system delivers machine and payload data to the customer.

Truck Payload

Increasing median truck payload while maintaining or decreasing overload rates can dramatically increase the overall productivity of an excavator.

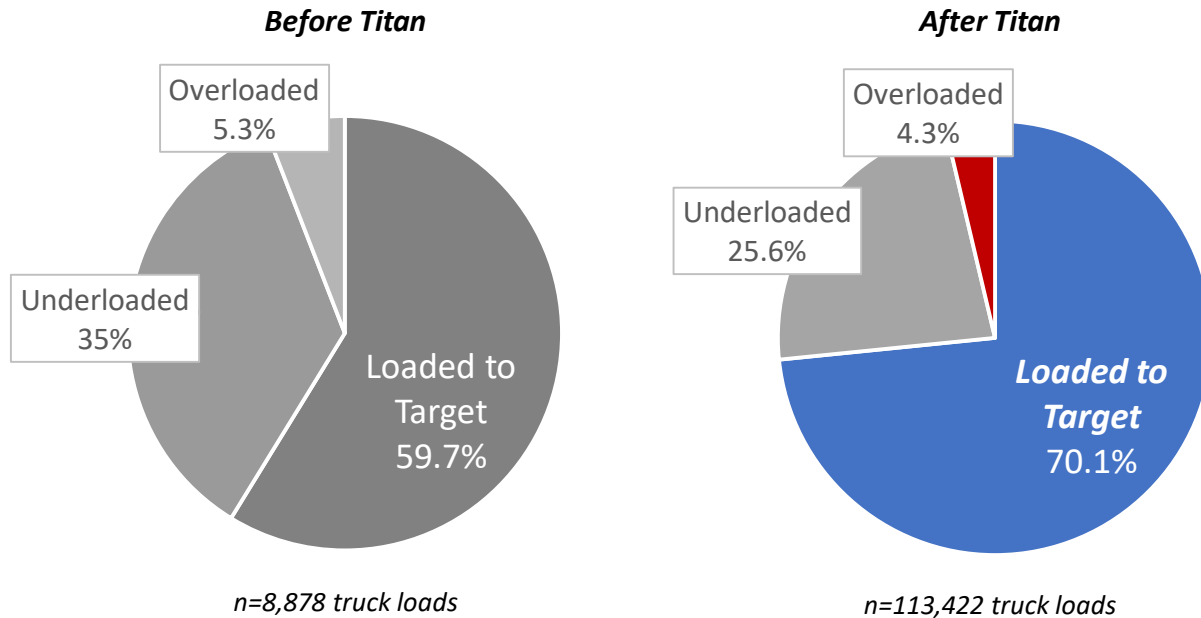


Figure 3 – Median Truck Payload per day sectioned into 'Before' and 'After' implementation of Titan 3330™ system.

Titan 3330™ Load Haul Optimization and Analysis and Improvement capability can improve your fleet's performance today.

CASE STUDY *(Continued)*

Truck Payload Classification per Period *(10 excavators and Titan 3330 systems included in sample)*

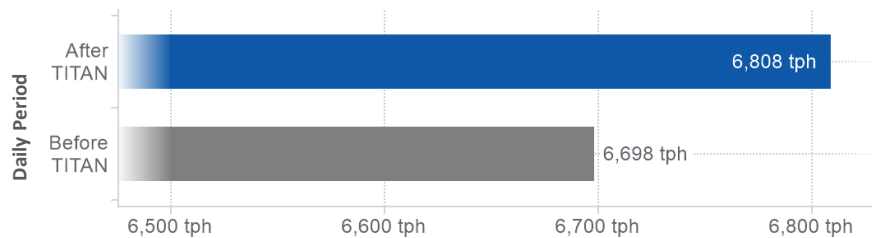


Additional Benefits:

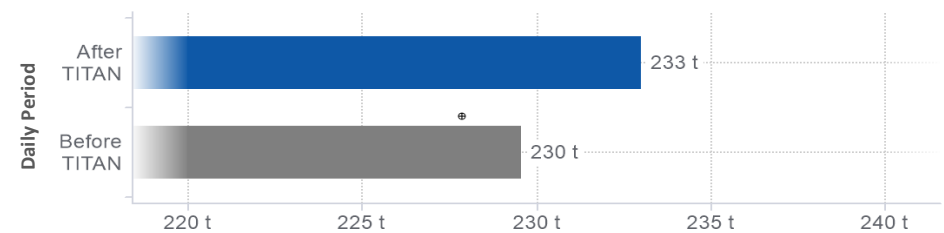
- ✓ 9.4% Reduction of truck underloads
- ✓ 1.6% Increase in Instantaneous Productivity*
- ✓ 1.4% Increase in truck fill factor (compared to truck rated capacity)
- ✓ 1.7% Decrease in truck payload Spread
- ✓ 10% Reduction in machine attachment duty

**Tramming & idle time not included*

Instant. Production Rate



Average Truck Payload



Titan 3330™ Load Haul Optimization™ Analysis and Improvement capability can improve your fleet's performance today.