



CASE STUDY

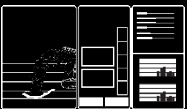
Application Background

Commodity:	Coal/Overburden
Digging Conditions:	Moderate
Machine:	Backhoe
Make & Model:	Liebherr R9800
Customer/Site:	Hunter Valley, New South Wales
Installation Date:	June – September 2016

Location



The Solution



Titan 3330 Load Haul Optimisation

The Outcome



Attachment Duty Reduction



Productivity Increase

Challenges

An Australian mining contractor operating in New South Wales commissioned a new ultra class mining excavator. A short time into the excavator's life, signs of overutilization began to emerge. Although the asset was achieving excellent production rates, the Miner had no way of quantifying and monitoring machine attachment duty. The challenge was placed to record and report duty to both maintenance and production teams, provide a method of self-regulation for operators and subsequently reduce overall machine duty.

The Solution

CR Digital's experienced field technicians worked with the Miner to install the Titan 3330™ Load Haul Optimization system on the Liebherr R9800 backhoe. The duty monitoring system is specifically designed to minimize machine duty by providing real-time, pass-by-pass feedback to operators on the major attachments through hydraulic cylinder monitoring. Sensors fitted on the excavator identify bucket cycles and map hydraulic circuit loads at high frequencies. A duty summary of each individual bucket cycle 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.

Titan 3330™ User Interface



Operators can monitor cylinder pressures in real-time

Colour coded cylinders indicate high duty

Operators can see attachment duty per bucket as they dig

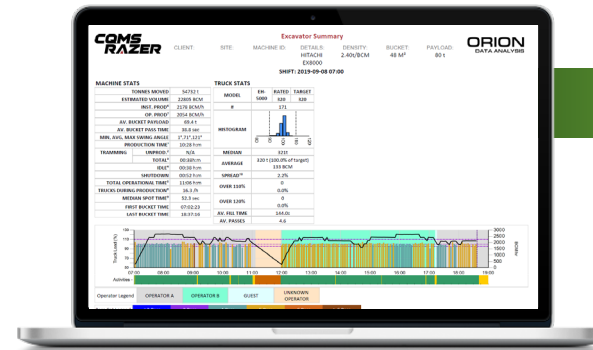
Figure 1 – Example of Titan interface used by excavator operators

CASE STUDY *(Continued)*

The Impact

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

- 15% decrease in machine Duty Factor
- 20% reduction in machine Duty per Tonne
- 10.5% reduction of Elevated & High Duty Events



ORION

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

Duty Factor

High Duty Factors indicate elevated loads on the excavator attachments and accelerated consumption of machine life.

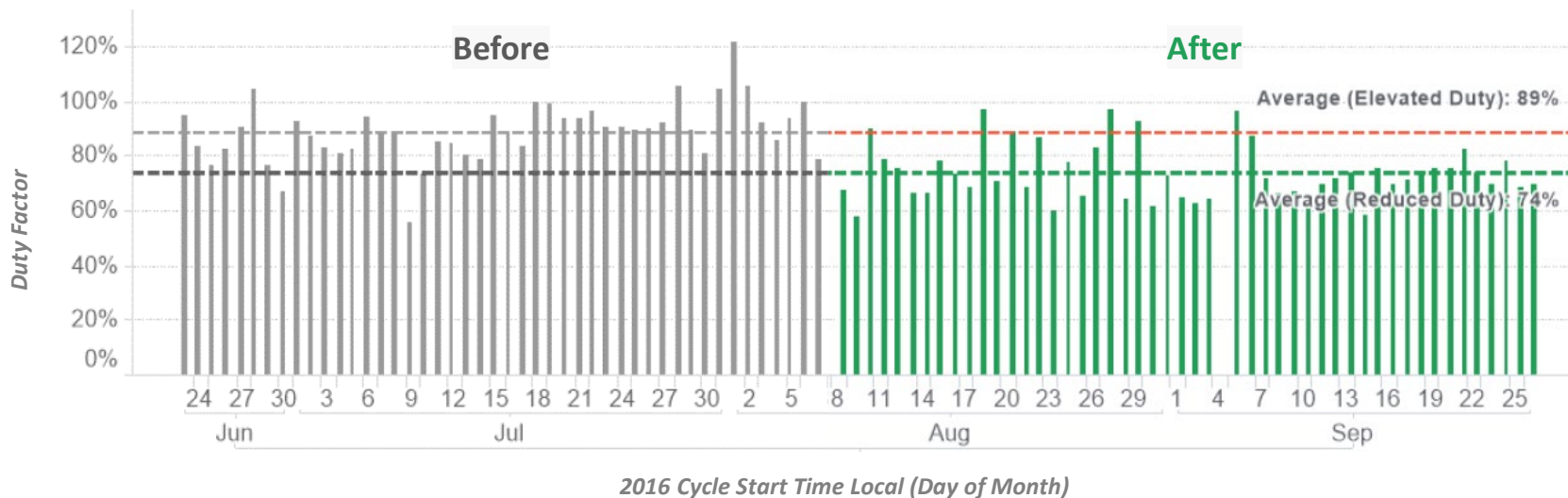
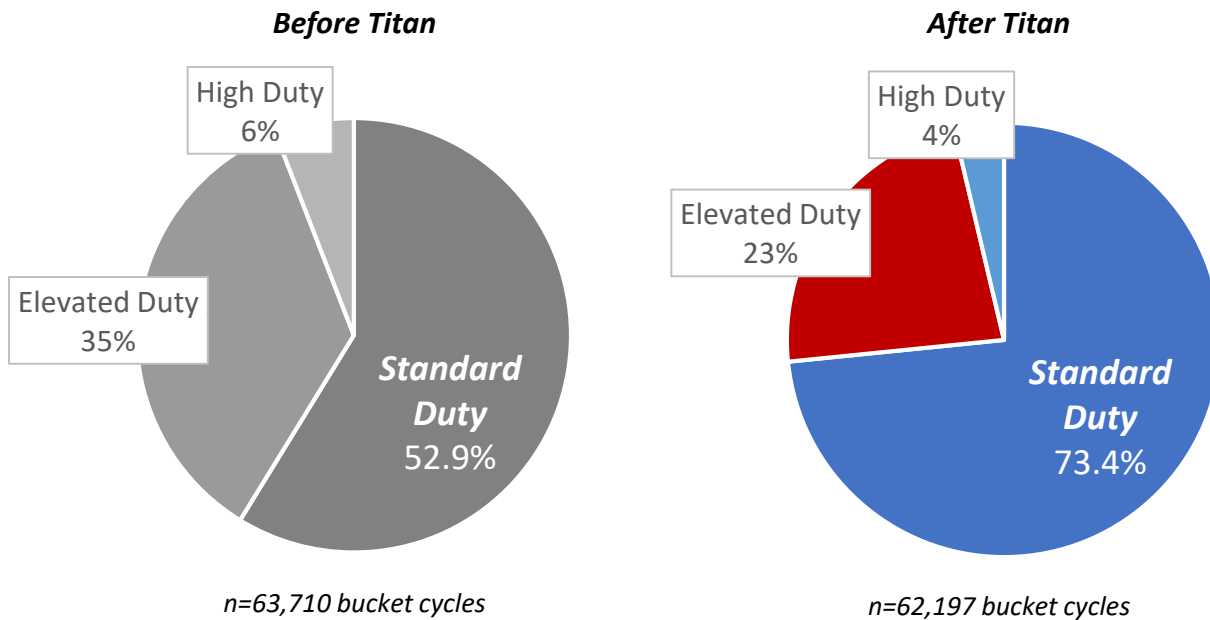


Figure 3 – Duty Factor summarized per day sectioned into 'Before' and 'After' implementation of Titan 3330™ duty monitoring.

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

CASE STUDY *(Continued)*

Duty Cycle Classification per Period

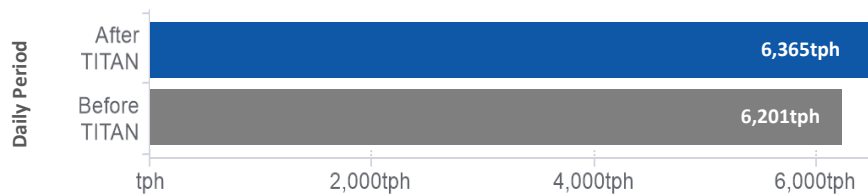


Additional Benefits:

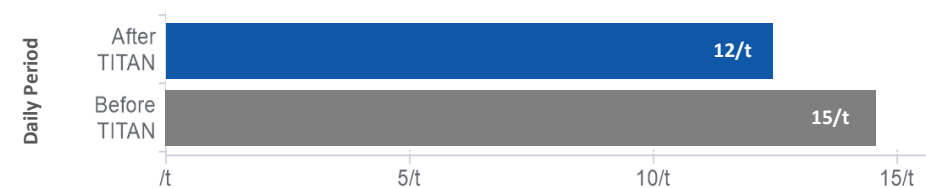
- ✓ 4% Reduction of truck underloads (equating to an additional 24,000 tonnes of material)
- ✓ 1.6% Decrease in High Duty Events
- ✓ 2.8% Increase in Instantaneous Productivity*
- ✓ 1% Increase in truck fill factor (compared to truck rated capacity)
- ✓ 2% Decrease in truck payload standard deviation (falling to 8%)

*Tramming & idle time not included

Instant. Production Rate



Duty per Tonne



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