



CASE STUDY

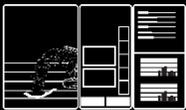
Application Background

| | |
|----------------------------|-------------------------------|
| Commodity: | Coal |
| Digging Conditions: | Moderate |
| Machine: | CAT Backhoe |
| Make & Model: | 6040 |
| Customer/Site: | Central Queensland, Australia |

Location



The Solution



Titan 3330 Load Haul Optimisation

The Outcome



Optimised
Passes



Productivity
Increases

Challenges

An existing customer, operating the TITAN 3330™ Load Haul Optimization system in Central Queensland, had observed continuous production improvements for the initial 6 months after installation. After that point - production rates appeared to plateau, creating a challenge for both the CR Digital Analysis and Improvement (A&I) team and the Miner to drive further advances. The challenge was defined to understand the bottlenecks within the load haul circuit and execute a plan to increase production to new levels.

The Solution

CR Digital's A&I Team worked with the Miner to unleash the full benefits of the data collected by the industry leading TITAN 3330™ Load Haul Optimization system installed on their CAT 6040 backhoe. The solution developed focused on two key elements of the production circuit, simplifying the project and enabling site to easily control allocated resources.

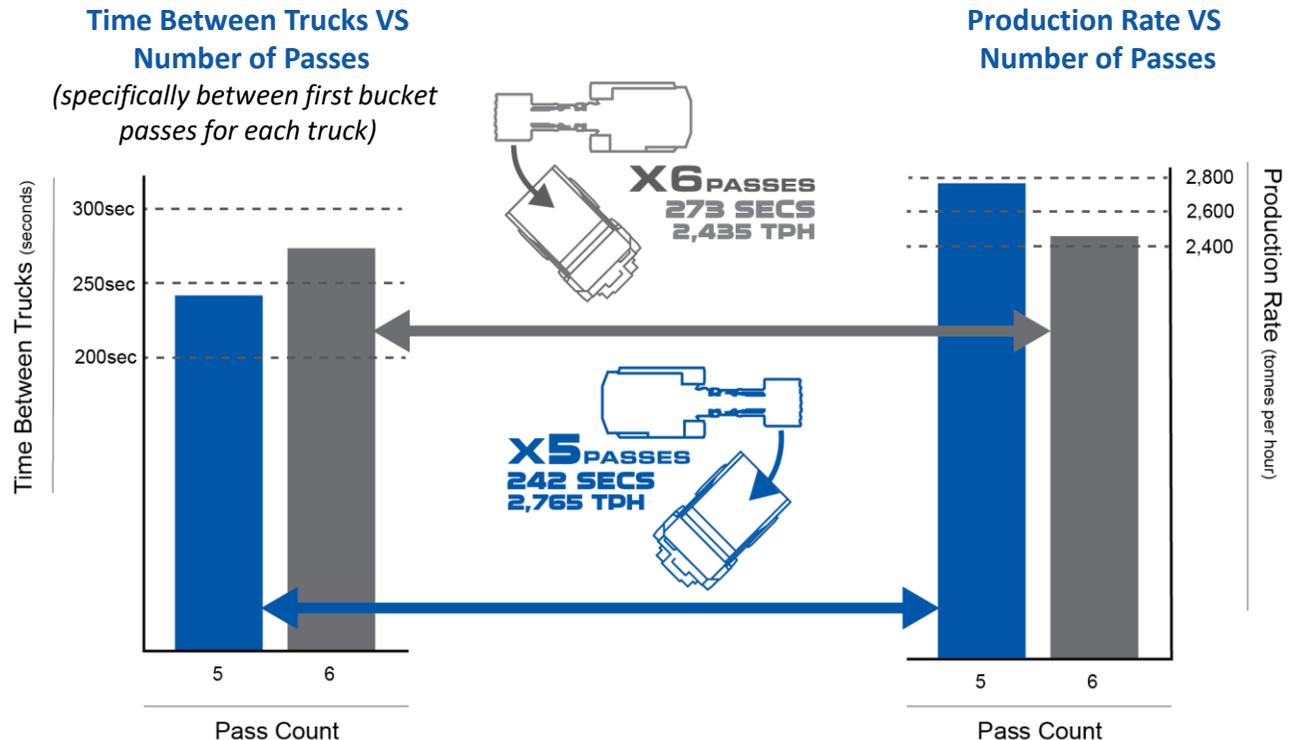
CASE STUDY *(Continued)*

Solution Part 1

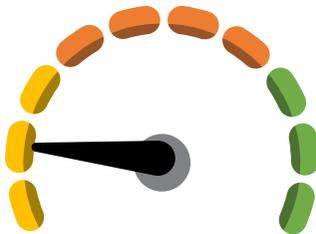
A Pass Matching analysis was completed using TITAN 3330™ data on the Orion Data Analysis platform. Outcomes of that analysis indicated that operators were preferencing 5 to 6 bucket passes, where the 6th pass was statistically a partial bucket. Partial bucket passes typically extend truck fill times while underutilising the capacity of the bucket, resulting in an overall decrease in production rate. Pass Matching data and insights were discussed with site trainers to build a mentoring program that would optimise loading practices.

Part 1 - Optimized pass matching through TITAN 3330™'s real-time feedback and A&I insights delivered a 2.5% increase in instantaneous production rate (on top of initial production increase unlocked after installation)

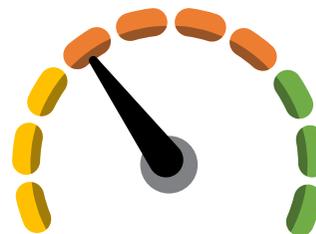
The Impact



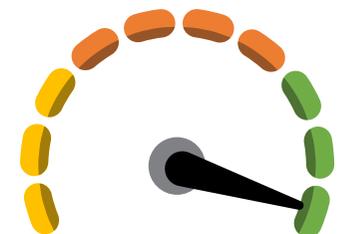
Less time between truck loads



Optimized passes



More production



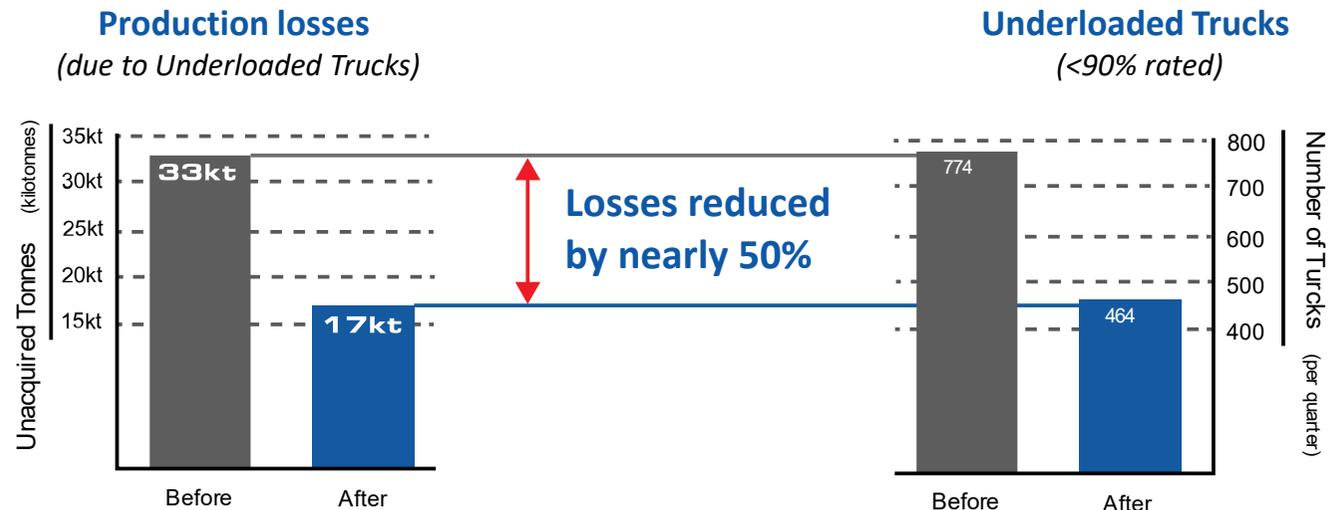
CASE STUDY *(Continued)*

Solution Part 2

Truck loading data from the first 6 months of operation, accurately acquired by the TITAN 3330™ system, was analyzed using the Orion Data Analysis results indicated that a significant portion of trucks were not loaded to full capacity before leaving the dig unit, leaving critical tonnes of material in the bench. Combining this observation with the Pass Match analysis conducted in Solution Part 1 – an operator mentoring program was put in place to maximize the payload of each truck. Ultimately this program reduced the number of under loaded trucks per shift and further boosted production.

Part 2 - Truck loading data analysis and a subsequent operator mentoring program delivered a 6.2% reduction of truck underloads, equating to an additional 16,000 tonnes of material moved during a single quarter.

Before Mentoring vs After Mentoring





The A&I Team works closely with each Client to maximise the benefits of CR Digital's products. Specialising in analytics and operational improvement, the team of engineers and analysts tailor solutions to each site's requirements. Actionable data and insights provided by the A&I Team enable projects that create real productivity and maintenance outcomes.

Additional Benefits:

- ✓ 19.5% Increase in Operational Productivity
- ✓ 2% Increase in truck fill factor (compared to truck rated capacity)
- ✓ 0.2% Reduction of truck Major Overloads (>120% rated capacity)
- ✓ 2.5% Increase in Instantaneous Productivity*
- ✓ 1.5% Reduction of truck Minor Overloads (>110% rated capacity)
- *Tramming & idle time not included

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