

14TH JULY 2022

LEVERAGING AI TO DELIVER INSIGHTS AND VALUE TO STEVENSON AGGREGATES DRURY



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Agenda

SMARTER SOLUTIONS

IOQ CONFERENCE

ORICA DIGITAL SOLUTIONS

3

FRAGTRACK™ TECHNOLOGY OVERVIEW

4

FRAGTRACK™ CRUSHER AT STEVENSON DRURY

10

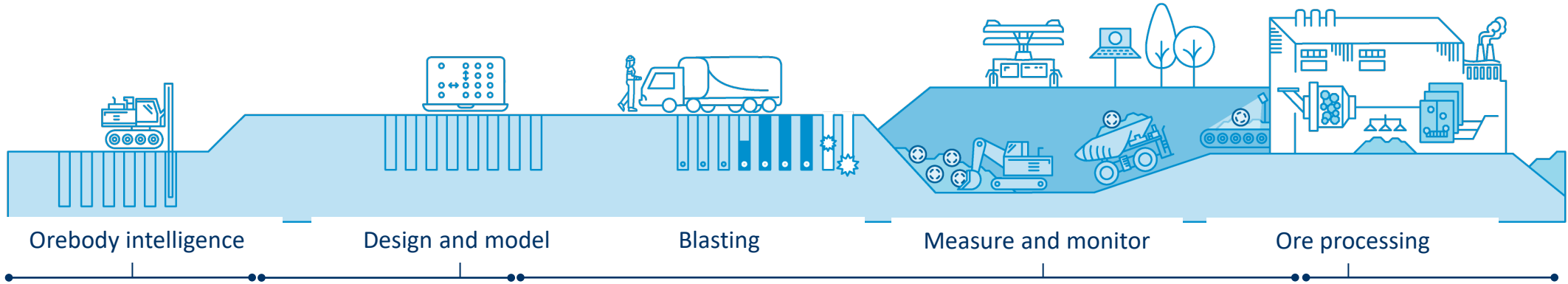
NEXT STEPS

17

Orica Digital Solutions moving beyond blasting to integrate multiple data inputs enabling data driven decisions

SMARTER SOLUTIONS

VISION & PURPOSE



Oreboddy intelligence

Design and model

Blasting

Measure and monitor

Ore processing

Value add

Enhanced orebody knowledge

Outcome-based blasting templates

High quality downstream measurement

Real-time measuring and monitoring geohazards

Real-time traceability

Connecting orebody to downstream processing

Orica solutions



BLASTIQ™
Design for Outcome



GroundProbe™



IES SIMULATOR

High resolution real-time sub-grade information to improve grade models

Cloud-based platform for blast design, control, and information management

Automated ore and fragmentation data capture and reporting

Accurate measurement and monitoring of amount, shape and degree of movements to detect collapses

Predictive model to determine ore and waste boundaries post- blast

End-to-end simulation and optimisation; cloud-based platform

Collaboration with industry ecosystem partners: Our platform is Open, Secure and Connected



FRAGTRACK™ TECHNOLOGY OVERVIEW

What is FRAGTrack™?

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TECH OVERVIEW



F50 PROCESSING UNIT

- ✓ AI and Internet of Things IoT Edge enabled
- ✓ 4G, Wireless and LAN connectivity
- ✓ Built-in HP GNSS positioning receivers
- ✓ High performance GPU and CPU processors
- ✓ Ruggedised IP67 housing

LIGHTWEIGHT F60 CAMERA

- ✓ Ruggedised mounting hardware
- ✓ Shock and vibration resistance
- ✓ IP67 water and dust proof housing
- ✓ Advanced optical cameras



FRAGTrack™ Technology Portfolio

SMARTER SOLUTIONS TECH OVERVIEW




Shovel


FRAGTrack™


Crusher


FRAGTrack™


FRAGTrack™

Conveyor



**EDGE COMPUTING AND CLOUD
BASED**

Local data stored in unit and cloud ensure
availability

SELF-CLEANING DEVICE

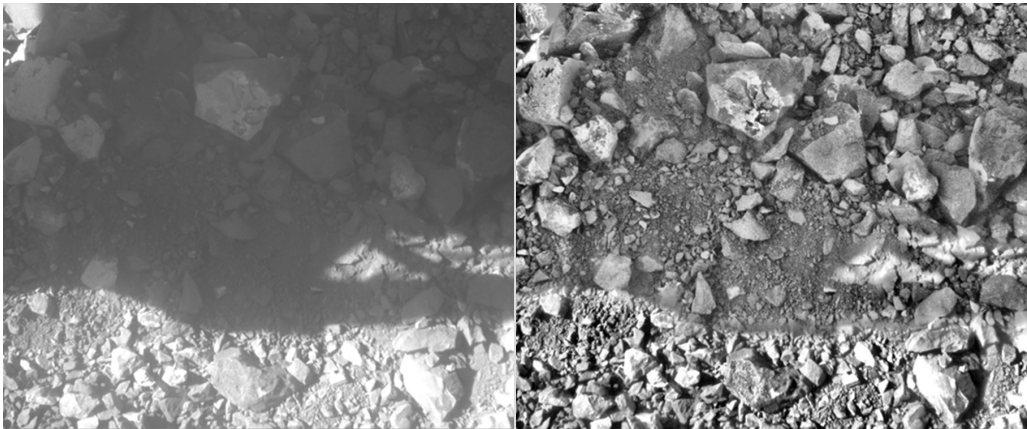
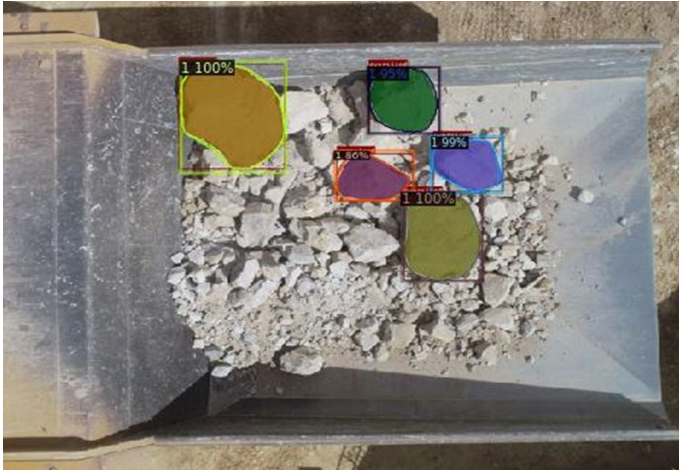
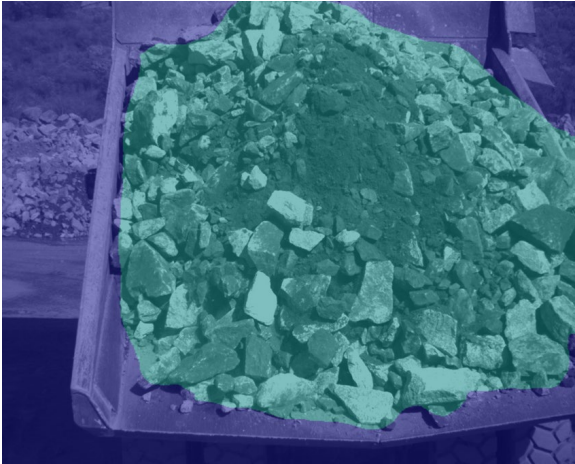
Automated solution to repel dust

OPC/FMS INTEGRATION OR RFID TAGGING

Real-time interface to control systems and truck identification

FRAGTrack™ AI technology

SMARTER SOLUTIONS TECH OVERVIEW

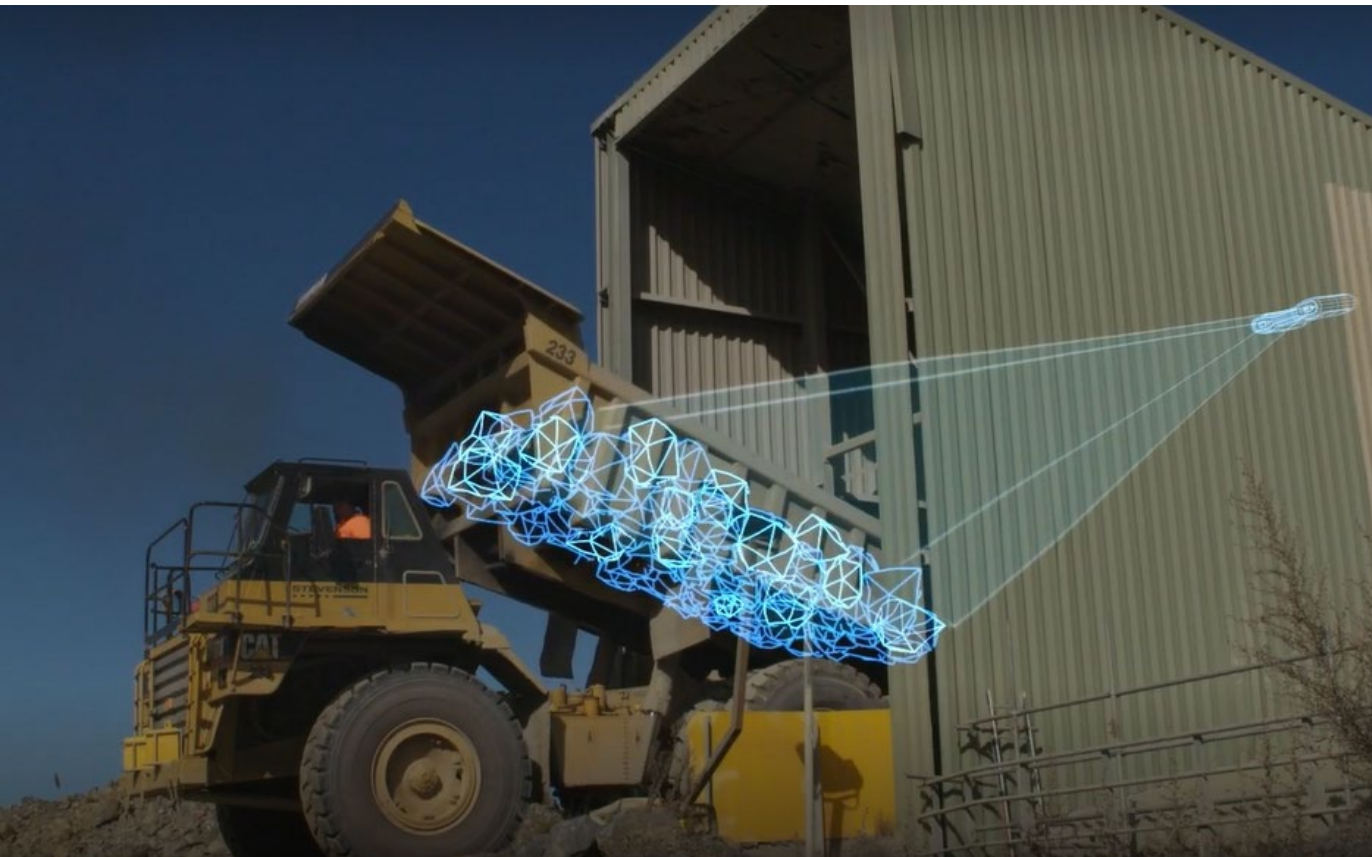


Sustainable outcomes through FRAGTrack™

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TECH OVERVIEW

LOW OPERATIONAL FOOTPRINT



CUSTOMER BENEFITS



More tonnes processed using the same energy, water and diesel consumption

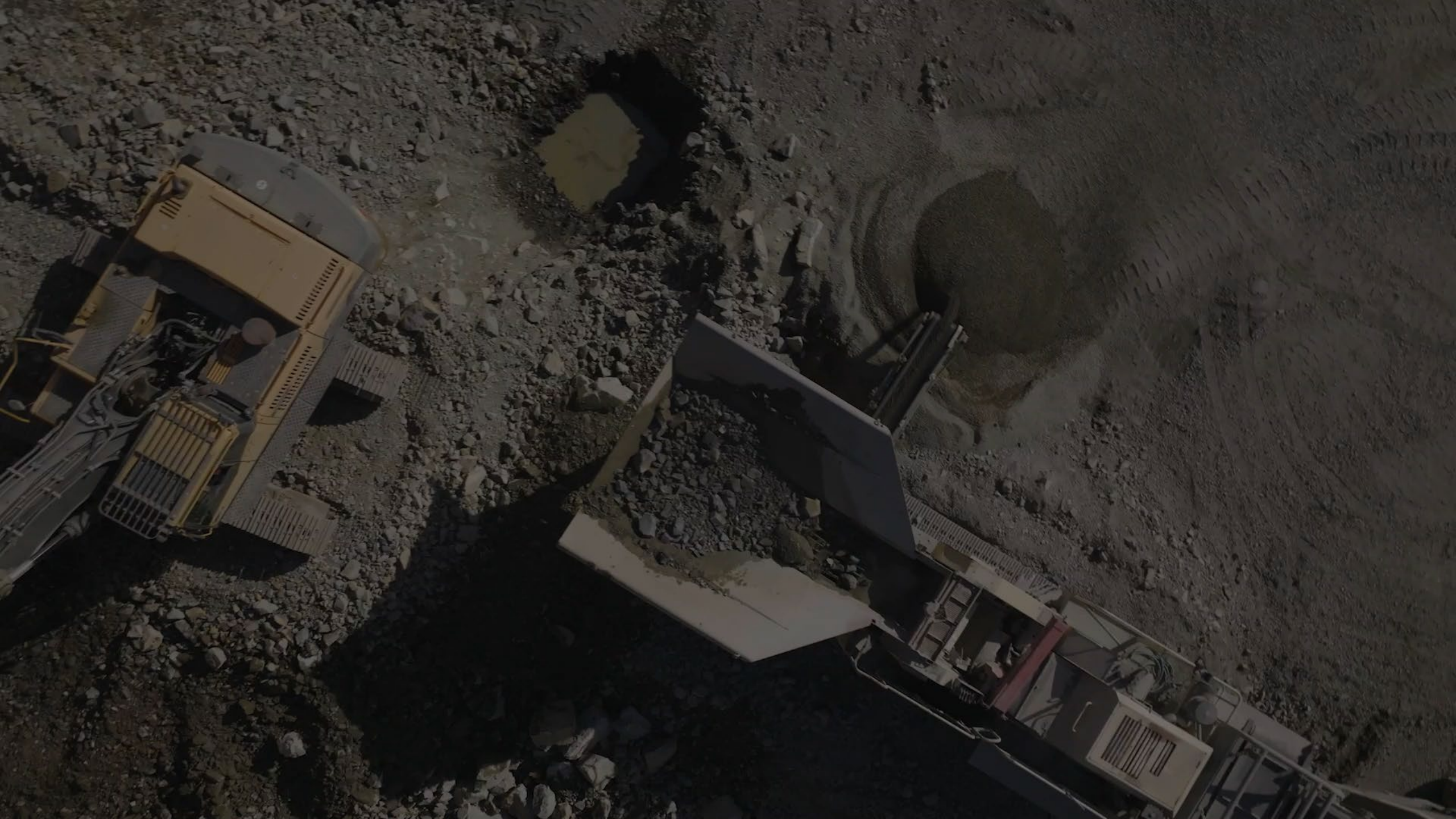


Delivering products with fewer inputs



Reducing carbon footprint for products

FRAGTRACK™ CRUSHER AT STEVENSON AGGREGATES DRURY



Site Profile

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DRURY OVERVIEW

- Drury quarry located 35km south of Auckland CBD, operating since 1939
- One of the largest quarries in New Zealand operated by Stevenson Aggregates
- Production of approximately 3Mt of aggregate per annum
- Committed to sustainability and operational efficiencies by leveraging technological innovation



Situation

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DRURY CHALLENGES

- Ever increasing demand for aggregate products putting pressure on quarries to increase production rates
- Reduce carbon output for products
- Variation in crusher throughput and scalping yield
- Manual post-blast fragmentation analysis was time consuming and not sustainable in the long term as a workflow

Choosing FRAGTrack™

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THE MOTIVATION

- Improve D&B workflow with an automated, safe and continuous system to monitor PSD
- Leverage fragmentation analysis to improve throughput and increase the quantity of high value product vs scalping
- Develop a PSD baseline to enable D&B optimisation while analysing the energy consumption and wear and tear on the plant



Project Timeline

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IMPLEMENTATION

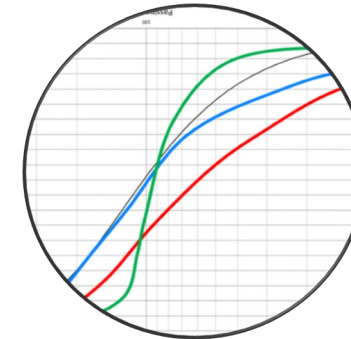
Initial engagement and technology demo



Manufacturing of FRAGTrack™ unit



PSD baseline development (Phase I)



Nov

Dec

Jan

Feb

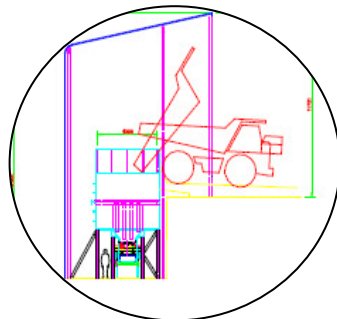
Mar

Apr

May

June

July - Sept

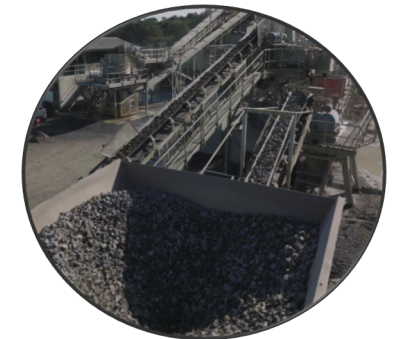


Site scoping Drury



Implementation on site

- 5 hours to Install
- 3 x truckloads calibration
- 1 hour BlastIQ training



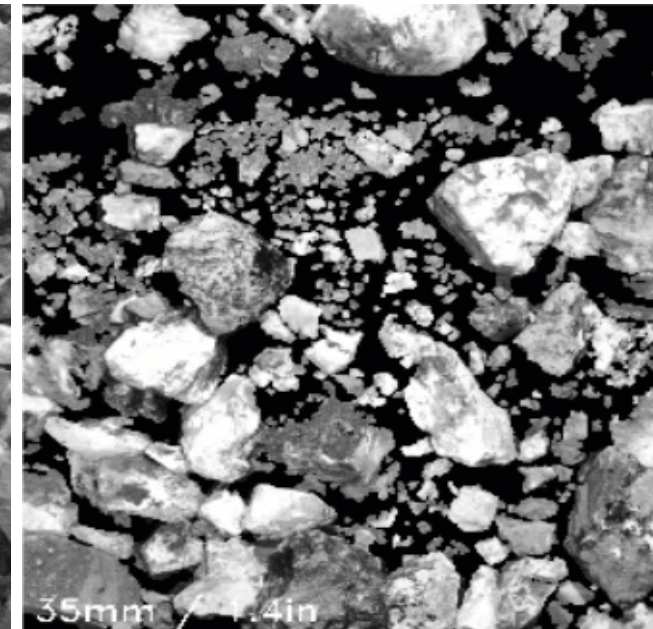
PSD correlation to D&B parameters and processing plant performance (Phase II)

Results year to date

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PHASE I DRURY

- **>4,500** automatically processed samples (~750 man hours saved) to generate PSD baseline as Phase I of project
- **Calibration** of fragmentation prediction model to optimise blast design with accurate PSD data
- Matching PSD to **crusher performance** (in progress)



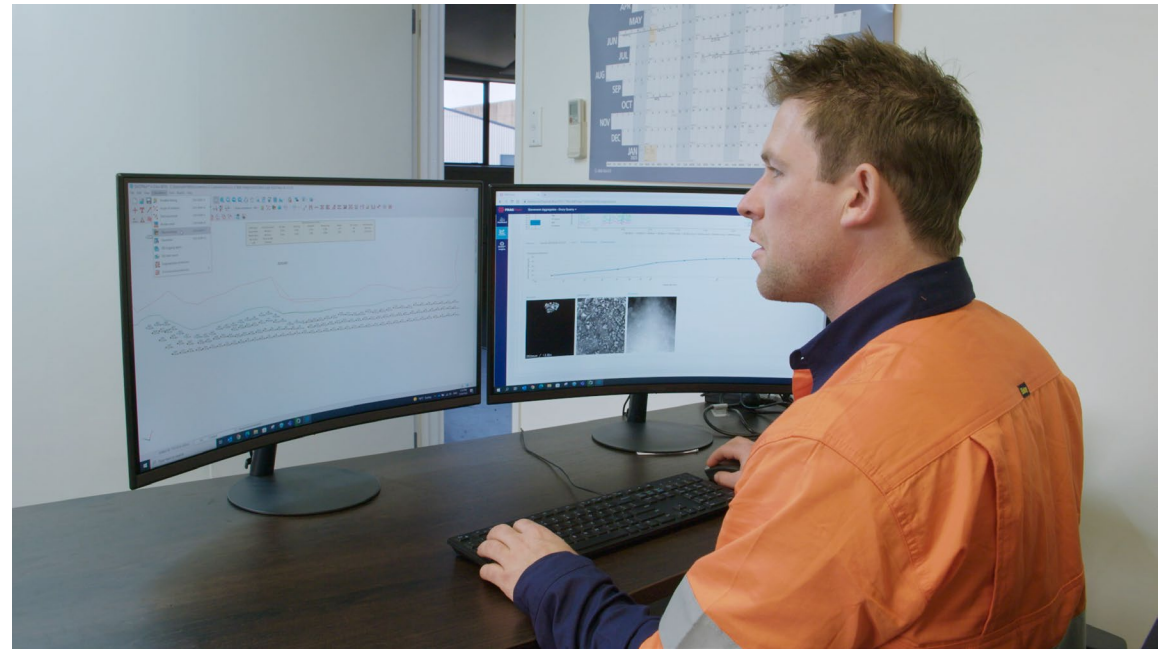
NEXT STEPS

Next Steps

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PHASE 2 DRURY

- Trace back fragmentation to blast (integration into Fleet Management System)
- Validate optimised D&B designs and confirm blasting performance with FRAGTrack™ Crusher
- Analysis of correlation of PSD to powder factor, crusher energy consumption (quantify the reduction of carbon footprint)



THANK YOU

OPTIMISED BLAST DESIGN



$PF \text{ kg/m}^3 = M_c / V_1$
Powder factor: 0.15 kg/m³

Burden: 2.4 m