



BLASTIQ™ SYSTEM

Integrated technology solutions to optimise every blast

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ORICA'S BLAST IQ™ SYSTEM DELIVERS A RANGE OF TECHNOLOGY SOLUTIONS TO IMPROVE PRODUCTIVITY AND REDUCE THE OVERALL COST OF DRILL AND BLAST OPERATIONS.

Orica understands the blasting needs of customers around the globe, with an expert team of blasting engineers supporting around 1500 blasts each day. The Orica team works closely with its mining and quarrying customers to tailor blasting solutions to meet those needs.

The Blast IQ™ system can continuously improve blasting outcomes through the linking of work flows and integrating data throughout the drill and blast process. Blasts can be tailored to efficiently utilise energy

and reduce wastage. Better quality blasts are delivered, using targeted specifications that result in increased downstream productivity and reduce unit mining costs.

At every stage of the blasting process, from pre-blast modelling through to post-blast measurement and analysis, Blast IQ™ provides the benchmarks and insights needed to ensure sustainable, cost-effective improvements in blast performance.

BLAST IQ™ SOLUTIONS

The Blast IQ™ System provides the tools to plan, execute, measure and analyse each blast. The technologies in the Blast IQ™ system are designed to deliver economic and operational value individually, but the benefits are maximised when they are integrated in a systemised process.



BLAST INFORMATION MANAGEMENT

Blast IQ™ supports customers in managing their drill and blast processes. Customers have online access to a centralised location for their design, drilling, loading and initiation files. They can also access blast assessment and environmental records, photographs and videos of their blasts. Multiple authorised viewers can simultaneously review version-controlled documents, enabling customised workflow management with in-built approval steps. Blast investigations and audits are also made simpler and more efficient.

BLAST DESIGN

This Blast IQ™ solution supports customers in reducing costs and enabling achievement of better quality outcomes. Customers can view blast designs in a spatial context, relative to neighbouring blasts and the mine landscape. They can overlay related mine information and blasting KPIs, allowing for rapid and improved insights. The inclusion of a world-leading 3D blast design tool allows users to act on the insights, to drive improvements in future blast designs.

BLAST CONTROL

This Blast IQ™ solution enables customers to achieve consistent quality blast outcomes, eliminating excess expense and reducing risk of poor environmental outcomes. Blast crews use technologies with in-built access to design, automated loading rules and efficient capture of auditable data from the bench. Exception reports can be generated to provide better visibility to manage blast quality control.

VIBRATION CONTROL

The Blast IQ™ Vibration control solution safeguards license to operate and optimises blasting productivity in constrained environments by providing the tools to design, model, implement and measure blasts to vibration limits.

Design and modelling

Blast IQ™ Vibration control allows designs in highly sensitive vibration control environments to be optimised down to the individual blast hole level. 3-D blast designs in correct spatial positioning can be simulated using a powerful vibration modelling technology accessed as an online service. The model uses ground signature waveforms and advanced techniques to provide access to leading edge modelling capability. Multiple designs can be modelled using changes in explosives charge-weights, blast orientation or blast initiation sequences, to allow comparison of predicted outcomes.

Results measurement

Blast IQ™ Vibration control measurement technology reliably, efficiently and securely captures blast vibration measurements. Field instrumentation can also be equipped additional measurement sensors, including airblast, noise, temperature, humidity, wind, dust and others. Vibration and other sensor readings are triggered by blast events and automatically stored online.

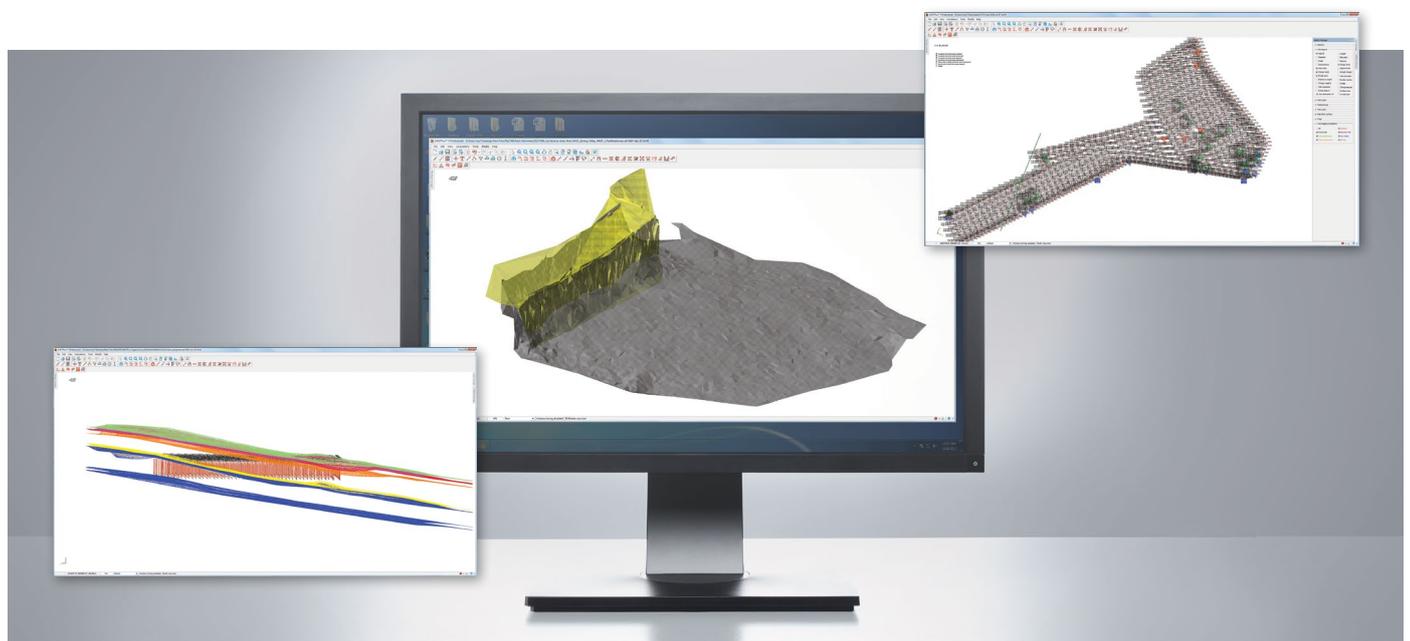
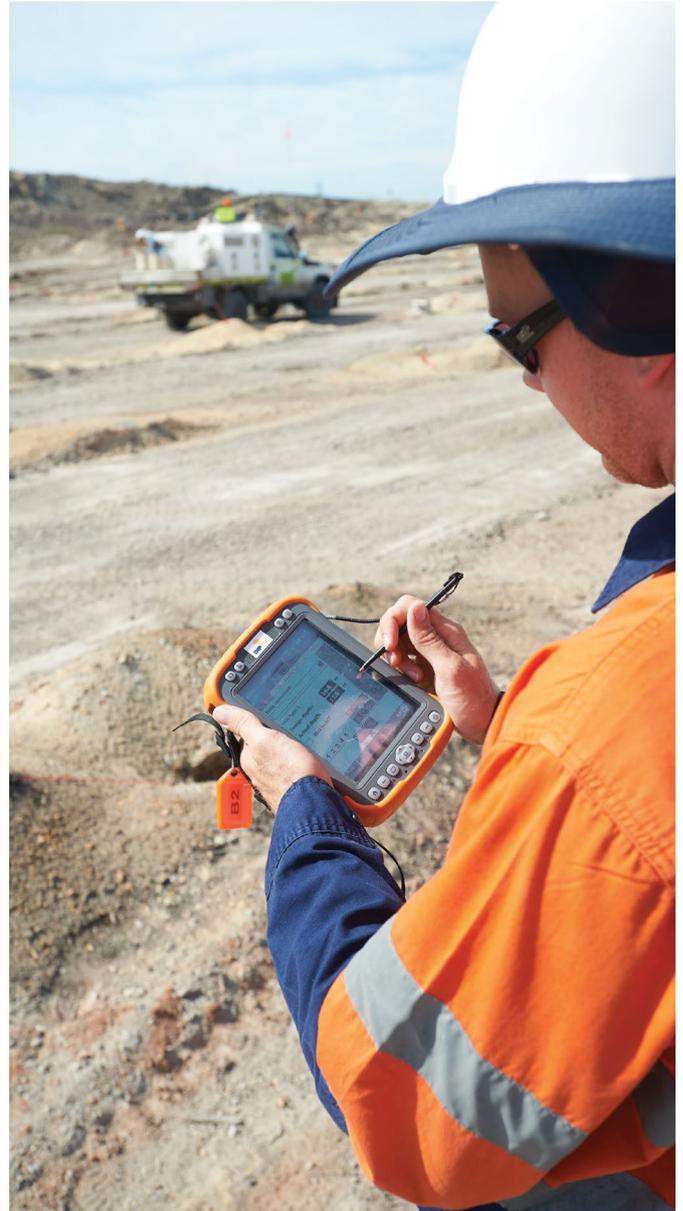
Insights and optimisation

Blast IQ™ Vibration control closes the design, simulation, measurement and improvement loop as an end-to-end solution. Vibration results are associated with blasts by firing time, allowing analysis of results versus blast designs and implementation quality in Blast IQ™. Measured data can be aggregated into site laws that assist in subsequent blast design, and blasts which exceed alert levels can be investigated remotely, down to the blast hole level.

FRAGMENTATION MEASUREMENT

This solution provides the capture and reporting of fragmentation data. The technology uses automatic triggering to efficiently capture images of material travelling along a conveyor belt. These stereo images are automatically processed using combined 2D and 3D techniques to provide fragmentation distribution curves. Historical trends are presented graphically and filters can be applied to focus on specific passing sizes.

The Blast IQ™ System delivers a range of blasting solutions to quarrying and mining customers to continuously improve their blasting outcomes.



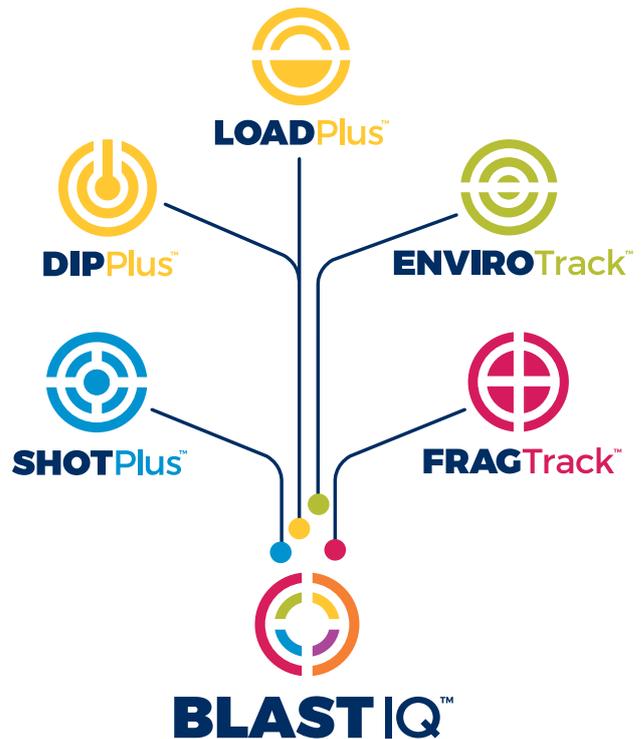
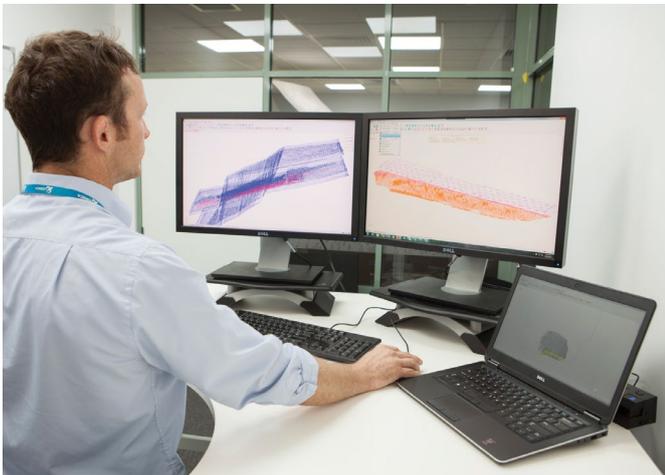
BLAST IQ™ TECHNOLOGIES

Orica's Blast IQ™ technologies are an integral part of the blast optimisation process. Productivity increases and reduced costs can be achieved through various phases of the drill and blast process.

SHOTPlus™ allows engineers to design, analyse and optimise every blast. SHOTPlus™ and SHOTPlus™ Premier software are a fundamental part of the Blast IQ™ System. The advanced application contains extensive electronic and non-electric detonator timing tools, as well as comprehensive blast design capabilities suitable for surface and underground mining, quarry and construction sectors.

DIPPlus™ enables accurate and efficient recording of data related to the blast hole. Blast pattern designs may be imported from SHOTPlus™ or created 'on the fly' during loading operations. The Blast Hole Conditions module electronically captures blasthole parameters such as depth, temperature and hydraulic status. This enables quality assurance of drilling operations and confirmation of hole status, prior to commencing loading. The Blast Loading module records the volume of explosives and stemming material loaded into each deck within the Blast Hole. It can also be used to adjust the loading instruction at point-of-load, via the application of Loading Rules.

ENVIROTrack™ monitors and measures blasting activities to ensure the environmental impacts of blasting are minimised. Sensors measure vibration, noise, airblast, temperature, humidity, wind, dust and other parameters, to help track and plan for environmentally sustainable performance. Data is generated and securely transferred to Blast IQ™ for access and analysis.



FRAGTrack™ is a binocular image capture system that provides blast fragmentation data with auto-analysis capability. The data can be related to blast designs and loading information, enabling matching and optimisation of outcomes to inputs. This in turn unlocks value in the downstream processes, such as excavation, load & haul and processing stages for many mining operations. FRAGTrack™ is currently available for mounting above a belt conveyor and will soon be available for in-pit applications.

Blast IQ™ is a web-based customer portal which allows the effective storage, management, sharing and referencing of blast-related information. Blasting engineers can use Blast IQ™ to improve their blast designs, to achieve better quality and/or reduced cost by:

- Accessing a history of blast designs, related files and user-entered KPIs in the one place;
- Readily gaining insights by viewing all historical blasts in spatial position;
- Providing open access to all stakeholders that can provide input to help improve the quality of the blast design.

The Blast IQ™ System is available in modular packages that can be tailored to suit each mine's needs.

To learn more about Orica's Blast IQ™ System, please contact your local Orica representative, or visit orica.com/blastIQ

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