



Blast Monitoring

100% capture rate: 100% certainty*



OUR PEOPLE
OUR HARDWARE
OUR FIRMWARE
OUR SOFTWARE

100% ECOTECH



7 days a week
365 days a year

100% Capture Rate: 100% Certainty*

Whether the project is above or below ground, on a construction, demolition, mining or quarry site, in a high-risk environment, companies need to ensure they continually maintain a traceable and defensible blasting position.

MULTI-LEVEL ASSURANCE

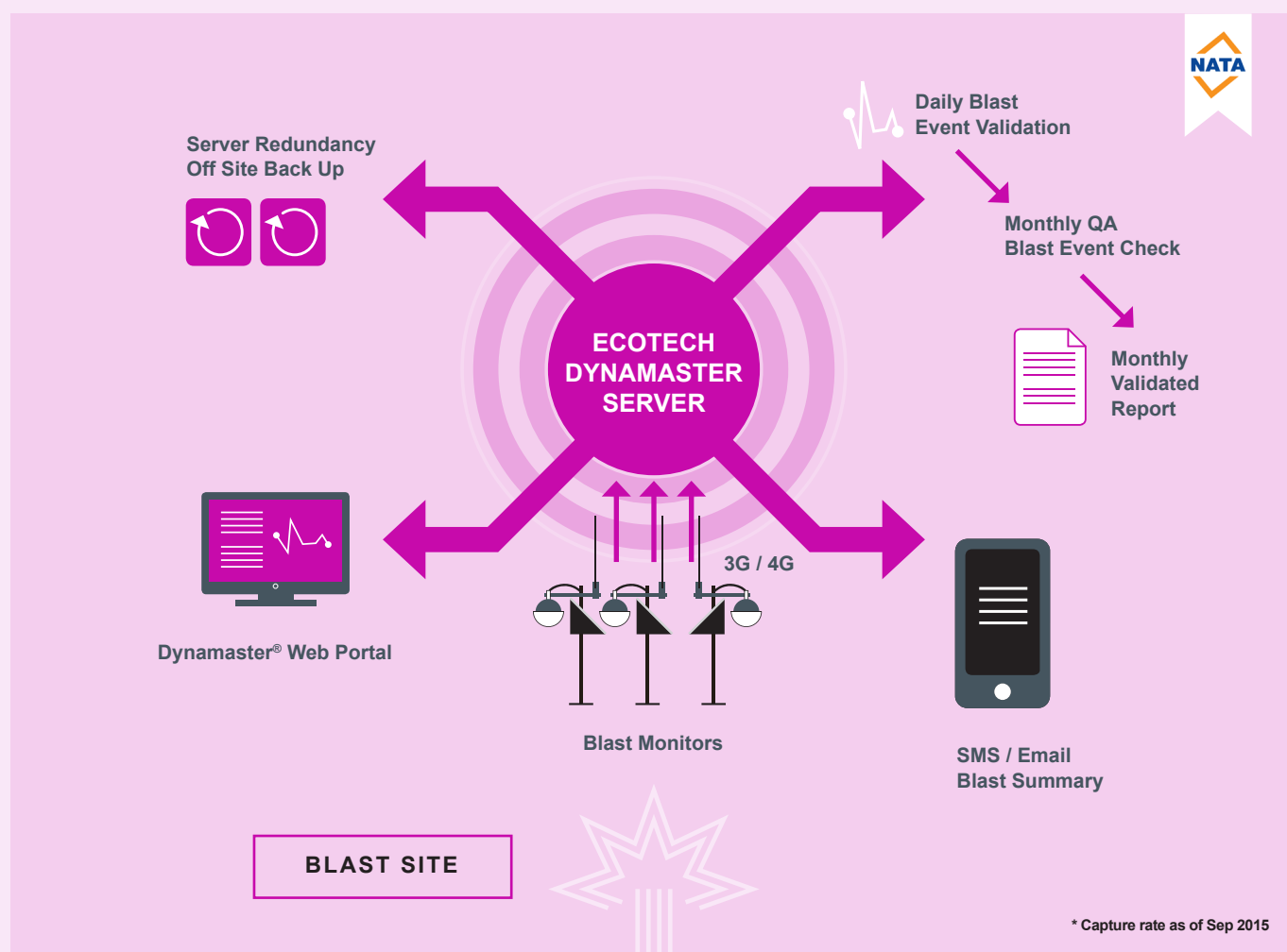
With 100 % raw data capture rate*, ECOTECH sets the benchmark for data capture.

The ECOTECH Dynamaster® Blast Monitoring System is a fully-integrated package for long-term rental or purchase with our trained staff managing the provision of blast data remotely.

5 POINT AUDIT CHECKLIST:

✓	Service provider has a proven track record capturing all blasts, every time
✓	Service provider has a fully 3rd party audited process for the capture and reporting of blasts
✓	Service provider can offer a NATA accredited service
✓	Service provider has fully redundant off-site disaster recovery capability
✓	Service provider conducts daily pseudo-blast downloads to check system integrity.

A score of 5 / 5 is required for 100% capture rate, 100% certainty*



Where it All Starts

ECOTECH Blast Monitors:

- Operate autonomously 24 / 7, using solar power
- Events retrievable up to 25 weeks after blast
- Pinged continuously to ascertain operational status – if they are offline, we know within minutes
- Triggered daily to test recording status and download capability
- Inform customers of faults within 24 hours with quick technician response times.

Access to Data at All Times

ECOTECH Blast Network Provides:

- Private 3G / 4G network for remote downloading and control of monitors
- Two independent central servers, located in Sydney and Melbourne (Australia)
- Two independent fibre connections, two independent power feeds backed up with UPS
- Two independent SQL servers for data backup
- SMS messaging system to alert clients if monitors go offline
- Access to real-time data on website.

Our People Make the Difference

The Dynamaster® Blast Monitoring System is managed by a team of experts within the ECOTECH Environmental Reporting Services (ERS) department.



ECOTECH's dedicated Environmental Reporting Services (ERS) department performs all data management from data download, validation and reporting, to live data on the web and coordination of on-site repair and maintenance.

Every waveform generated and uploaded is reviewed and audited by ERS staff which includes a team of data analysts, a blast monitoring coordinator, a technical coordinator and a quality coordinator.

- Our reporting services crew includes degree-level scientists and engineers based in Melbourne who are all fully trained in blast monitoring quality control
- Our blast services have a dedicated coordinator whose sole task is to ensure dependable and reliable results are delivered day in day out.

NATA - ECOTECH Quality Assurance

National Association of Testing Authorities (NATA) Australia is the national organisation for conformity assessment of technical operations such as laboratories, inspection bodies, proficiency testing scheme providers and reference material producers.

- We are NATA & ISO / IEC 17025 accredited for blast monitoring
- We are audited by independent assessors to check the validity and integrity of systems, processes and results
- We perform proficiency studies to ensure vibration and over-pressure readings are within stated uncertainty
- We perform geophone calibration checks against traceable voltage and time standards

- We conduct field response checks on all our blast monitor geophones and microphones quarterly
- We review every blast waveform for quality and integrity to ensure correct event result
- We have an internal peer review system for sign off on all reports prior to release
- We have NATA accreditation for low frequency blast microphone calibrations with a primary referee calibrated by NMI.

ECOTECH's NATA accredited facilities and services comply with the requirements of ISO/IEC 17025:2005 and include:

- Testing Laboratoriesⁱ
- Calibration Laboratoryⁱⁱ
- Blast Monitoring Service.

ECOTECH holds NATA accreditation numbers 14184 and 19650. For more information visit ecotech.com/nata

ⁱ Located in Melbourne and Perth

ⁱⁱ Located in Melbourne



ECOTECH Blast Monitoring Specifications

ECOTECH's Blast Monitoring System is available as a fully-integrated package for long-term rental with our trained staff managing the provision of blast data remotely.

The system consists of remote blast monitoring stations, called Dynamates® which are continuously supervised by a remote software package known as Dynamaster® on our server at Head Office, Melbourne.

Blast results are automatically collected from the stations, collated and then made available within minutes of the blast.

Customers can then view blast results, produce reports and interact with the server software via the Dynamaster® web portal.

FEATURES

- Fully-integrated package
- Easy post mount installation
- Solar powered system with battery
- Remote communication over GPRS, 3G or 4G
- Results and data are available only to authorised users and can be downloaded or viewed anytime at work, home, or on the road. All you need is access to the internet
- Users can be automatically notified of blast results by SMS, email or both within minutes of the blast
- Event file generation and retrieval
- No minimum time between event captures
- Advanced triggering methods ensure that 100 % blast capture can be achieved
- Advanced buffering methods enable the capture of blast results up to 25 weeks after a blast, even if an automatic trigger did not occur
- ECOTECH blast monitors are triggered daily to test their recording status and download capability.



Sample Waveform

GROUND VIBRATION MEASUREMENT

Tri-axial 4.5 Hz Geophone Assembly (NATA Accredited):

- Range: 0.005 - 24 mm/s
- Resolution: 0.01 mm/s
- Uncertainty: +/- 4.7 %
- Frequency Range: 5 - 250 Hz.

Tri-axial 2 Hz Geophone Assembly (NATA Accredited):

- Range: 0.005 - 20 mm/s
- Resolution: 0.01 mm/s
- Uncertainty: +/- 9.6 %
- Frequency Range: 2 - 250 Hz.

Tri-axial High Range Geophone:

- Range: up to 120 mm/s
- Resolution: 0.01 mm/s
- Uncertainty: ± 9.0 %
- Frequency range: 2 - 250 Hz.

OVERPRESSURE MEASUREMENT

Microphone (NATA Accredited):

- Range: 65 - 135 dBL (Peak)
- Resolution: 0.1 dB or 0.01 Pa
- Uncertainty: +/- 10 % or +/- 0.9 dB, whichever is larger
- Frequency Range: 2 - 250 Hz
- Weighting: Linear.

High Range Microphone:

- Range: 65 - 150 dBL (Peak)
- Resolution: 0.1 dB or 0.01 Pa
- Uncertainty: +/- 10 % or +/- 0.9 dB, whichever is larger
- Frequency Range: 2 - 250 Hz
- Weighting: Linear.

WAVEFORM RECORDING

- 8 GB Compact Flash Memory
- 1 kHz Detailed Waveform Sampling Rate
- Detailed waveform capture with 10 days on-board storage
- Summary waveform capture with up to 25 weeks on-board storage
- Continuous waveform recording uninterrupted by other activities.

TRIGGERING & RETRIEVAL

- Automatic vibration triggering and retrieval of data to Dynamaster® website
- Proprietary integral triggering technique to prevent false triggers
- Manual triggering of data possible via the Dynamaster® website up to 25 weeks after the event.

SYSTEM HARDWARE

- Power: 20 Watt Solar Panel
- Battery: 35 Ah Gel Cell: Up to 7 days power with no sun
- Primary communications: GSM / GPRS , UMTS / HSPA (3G)
- GPS & time auto synchronisation (+ / - 1 ms)
- PC interface: RS232
- Electromagnetic compatibility: CISPR - 22 (Australia) (PTBRC, FCC Part 15, CE Pending)
- Temperature Range: - 10 to + 50 °C.



ABOUT ECOTECH: Together we create solutions that shape the future

For over 40 years ECOTECH has pioneered innovative solutions in environmental monitoring for air, water, gas, noise, vibration, blast, fine particulate and dust. Headquartered in Australia, and certified to internationally recognised quality standards, ECOTECH operates in more than 80 countries, managing and maintaining over 500 real-time environmental monitoring sites consisting of thousands of individual pieces of precision equipment. ECOTECH is part of the ACOEM Group.

ABOUT ACOEM: Reduce your environmental impact

The ACOEM Group is a global leader in providing sustainable solutions for the development of smart cities of the future. It is committed to helping companies and public authorities meet challenges by offering products and services that:

- Prevent and control air, noise and vibration pollution
- Increase the productivity and reliability of industrial machinery
- Contribute to the development of effective, robust & noiseless solutions
- Protect soldiers, sites and vehicles in military theatres of operation.

Across the world, ACOEM's 700+ employees innovate in the measurement, analysis and control of environmental parameters through its 01dB, ECOTECH, ONEPROD, FIXTURLASER, MEAX, VIBARLIGN and METRAVIB brands.

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