

pulseEKKO®

FOR THE GPR PROFESSIONAL



pulseEKKO

Unparalleled performance with a wide range of frequencies for applications ranging from deep mineral exploration and glaciology to high resolution geotechnical investigations and concrete imaging.



Features

Broad range of frequencies
(12.5 MHz to 1000 MHz)

Low noise, high accuracy digital acquisition directly at receiving antenna

Wide range of regulatory compliant transmitters

Computer controlled voltage and temperature-stabilized time and amplitude

Low power consumption

	Deep Geology Glaciology	Geology	Utilities, Geotechnical	Archaeology	Forensics, Snow + Ice	Mining, Quarrying	Concrete, Roads, Bridges
12.5 MHz	•						
25 MHz	•						
50 MHz	•	•					
100 MHz		•	•				
200 MHz		•					
250 MHz			•	•	•		
500 MHz				•	•		
1000 MHz						•	•



200 MHz



250 MHz



500 MHz



1000 MHz



TR 1000

Resistive Dipole Antenna

Center Frequency	Size	Weight
12.5 MHz	736 x 14 x 5 cm (290 x 5.5 x 2 in)	7.2 kg (15.9 lbs)
25 MHz	368 x 14 x 5 cm (145 x 5.5 x 2 in)	3.6 kg (7.9 lbs)
50 MHz	184 x 14 x 5 cm (72 x 5.5 x 2 in)	1.8 kg (4 lbs)
100 MHz	92 x 14 x 5 cm (36 x 5.5 x 2 in)	1.2 kg (2.6 lbs)
200 MHz	46 x 14 x 5 cm (18 x 5.5 x 2 in)	0.8 kg (1.8 lbs)

Resistive Dipole Transducer

Center Frequency	Size	Weight
250 MHz	38 x 38 x 20 cm (14.5 x 14.5 x 8 in)	3.0 kg (6.6 lbs)
500 MHz	23 x 23 x 17 cm (9 x 9 x 6.5 in)	1.2 kg (2.6 lbs)
1000 MHz bistatic	15 x 15 x 12 cm (6 x 6 x 5 in)	0.6 kg (1.3 lbs)
1000 MHz Tx-Rx Combined	19 x 13 x 15 cm (7.5 x 5 x 6 in)	1.0 kg (2.2 lbs)

Flexible and efficient data collection

The digital video logger (DVL) has a high-resolution, sunlight visible, touchscreen and an intuitive user interface for efficient data-collection. Easily adjust survey parameters including survey type, antenna geometry, stacking and triggering to optimize your GPR survey.

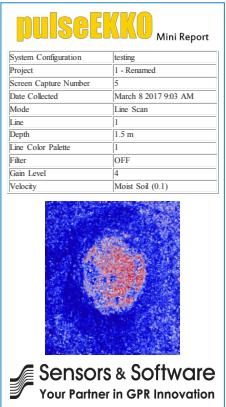
Internal GPS

Geo-tag screen captures and grids for Google Earth™



Wi-Fi Enabled

Connect to a Wi-Fi network or hotspot to email reports from the field

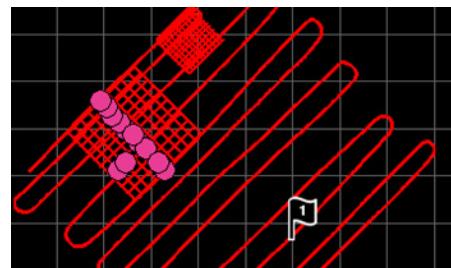


USB Data Transfer

Quickly transfer project data for further analysis

Optional External GPS

Serial port GPS connection for high accuracy positioning



Map View

Using GPS, view a map of the GPS survey path, grids, field interpretations & flags.



EKKO_Project Software

EKKO_Project makes complex GPR analysis and reporting easy with intuitive tools to organize, edit, process & plot your data.

System Configuration:		Sys Config 1	
GPR Parameters		Survey Parameters	
Frequency:	100 MHz	Survey Type:	Reflection
Time Window:	80 ns (12 ft)	Start Offset:	0 ft
Step Size:	0.3281 ft	GPR Trigger:	Odometer
Sampling Interval:	800 ps	Calibration:	1080
Stacks:	DynaQ	Antenna Separation:	1.64042 ft
Transmitter:	pE PRO Auto	Antenna Polarization:	Broadside
Velocity:	0.328 ft/ns	Antenna Orientation:	Perpendicular
		GPS:	Internal
Rename	Sys Config 1	New / Copy	Delete
–	+	Reset to Defaults	Back

Save configurations

Easily setup, name and save multiple configurations on the DVL to increase efficiency in the field.

ADAPTABLE CONFIGURATIONS

Full Bistatic



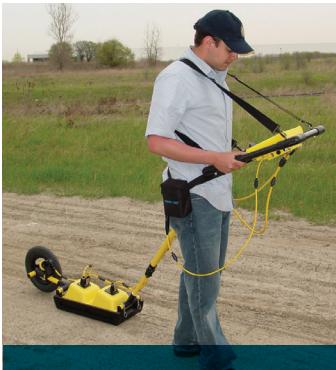
Work in rough, poorly accessible areas.

SmartCart



Fast surveying to cover large flat open areas.

SmartTow



Rapid GPR profiling over smooth to moderately rough surfaces.

One-Man



Single person operation for surveying in moderate to rough terrain.

Ergonomic deployment platforms. Quick release fasteners and interchangeable components enable rapid system reconfiguration. Integrated support for GPS, odometers and fiducial markers with triggering from a wide range of inputs provides accurate spatial positioning.

SmartChariot



Vehicle hitch-mounted; rapidly survey large, flat areas such as roads and golf courses

Product specifications

Control Module

Time Window: 0.5 to 200,000 ns

Points per Trace: 10 to 31,000

Hardware Stacking: 1 to 32768

Software Stacking: Unlimited

Signal Enhancement: DynaQ

Hardware Temporal Sampling Increment: 5 ps

Sampling: Digital Equivalent Time Sampling (DETS)

Pulse Repetition Frequency (PRF): up to 100 kHz

Data Quality Assurance: Active temperature and supply voltage compensation

Power Consumption: 100 mA @ 12V

Temperature Range: -50 to +50 C

Transmitter

Emission Regulation-Compliant Transmitters: FCC, ETSI (EU) and Industry Canada

Power Consumption: 150 mA @ 12V

Temperature Range: -50 to +50 C

Receiver

Receiver Sensitivity: 1.5 V lsb

Data Recording: 16 bit

Power Consumption: 100 mA @ 12V

Temperature Range: -50 to +50 C

System

Maximum System Performance:
 $186 \text{ dB} + 10 * \log_{10}(\# \text{stacks})$ ex. 219 dB @ 2048 stacks

Environmental: IP65

Auxiliary Positioning: GPS, laser tracking

Regulatory Specifications

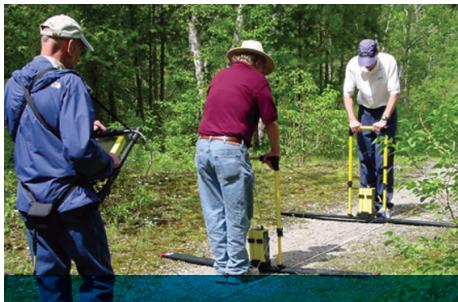
Complies with regulatory agency requirements for ultra-wideband equipment: FCC (Federal Communications Commission), Industry Canada and European Community (ETSI) standards.

ADVANCED SURVEY METHODS

pulseEKKO's bistatic antennas allow for variable antenna separations – ideal for CMP, WARR, multi-fold and transillumination surveys.

CMP

Common mid point (CMP) surveys for subsurface velocity measurements and seismic-style trace stacking.



Borehole

Subsurface measurements in boreholes.



WARR

Wide angle reflection and refraction (WARR) surveys.



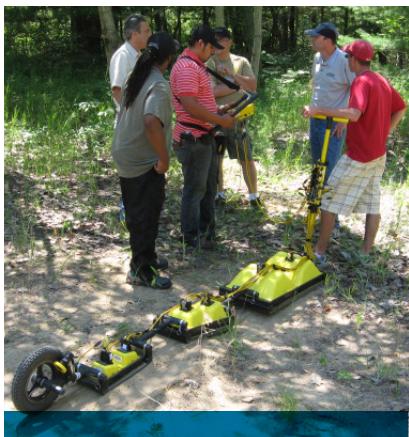
Transillumination

Direct one-way transmission through an object to extract travel time, amplitude and dispersion information.

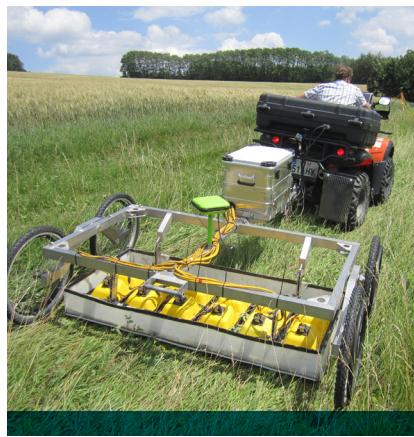


MULTI-CHANNEL SURVEYS

Multi-Frequency



Multi-channel array



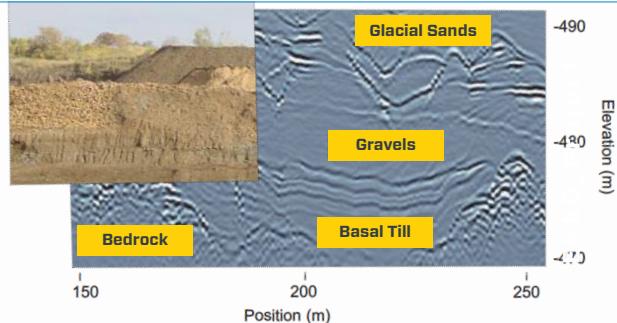
Multi-fold survey



APPLICATIONS

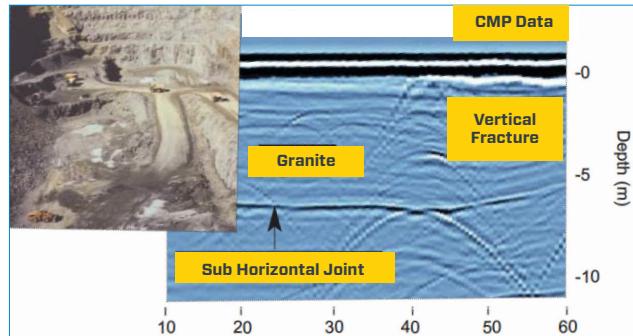
pulseEKKO applications include

GEOLOGICAL STRATIGRAPHY



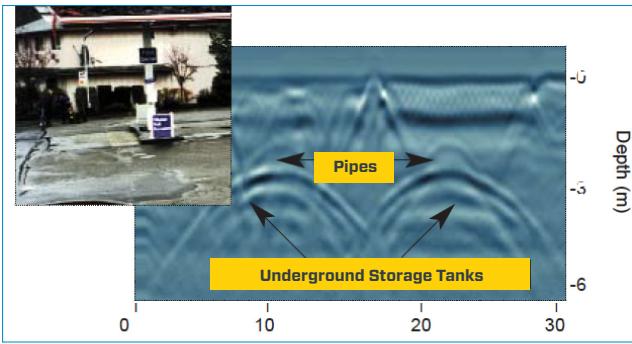
Profile subsurface stratigraphy and bedrock surface

MINING & QUARRYING



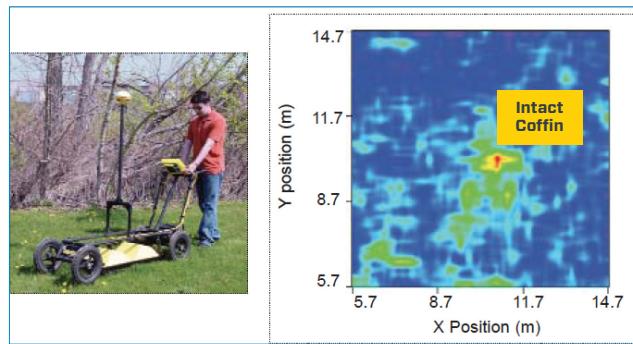
Detect changes in rock type, fractures, faults and joints for safety and resource development in underground mines.

GEOTECHNICAL & ENVIRONMENTAL



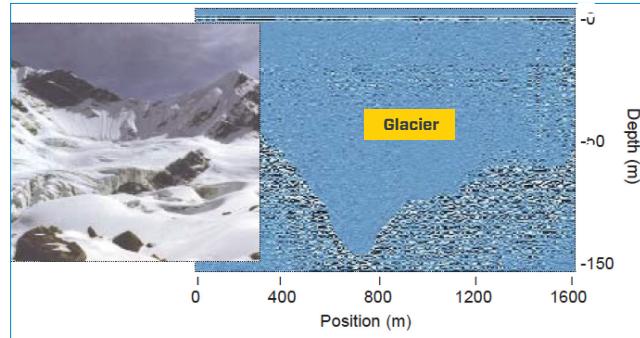
Map depth to bedrock, detect sinkholes, locate underground storage tanks (USTs). Drainage systems on golf courses and farms can also be located.

FORENSICS & ARCHAEOLOGY



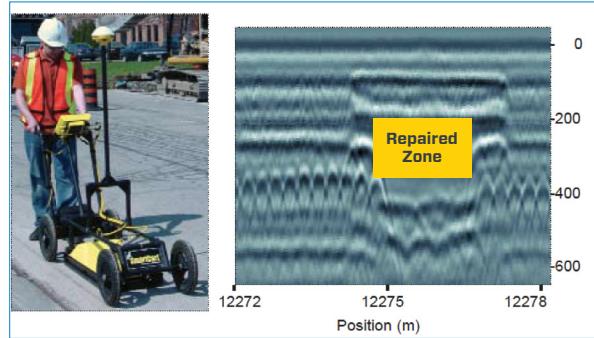
Law enforcement uncover buried caches of drugs, money, weapons and clandestine graves. Archaeologists image underground artifacts, tombs and the foundations of ancient structures.

GLACIOLOGY, ICE & SNOW



Measure ice thickness for winter road safety, snow depth, glaciological and polar ice-cap research.

STRUCTURE ASSESSMENT



Assess the interior of concrete and pavement for asset management and maintenance planning.

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**Subsurface
imaging
solutions**