



COBRA

WIRELESS GPR





WIRELESS OPERATION – No need for cables

MULTI FREQUENCY GPR – 100-900 MHz

COMPLETE GPR SYSTEM – Start surveying right away

POST PROCESSING SOFTWARE – included with purchase

GPS PATH FINDER MAP

WIDE SELECTION OF CONTROL UNITS – From rugged PDAs to PCs

QUICK RELEASE WHEELS

SMART CART – with push and pull capability

HIGH RESOLUTION ENCODER

ROUGH TERRAIN KIT

DEPTH RANGE – 0-500 ns [0-10 m]

HIGH PENETRATING 400 V TRANSMITTER

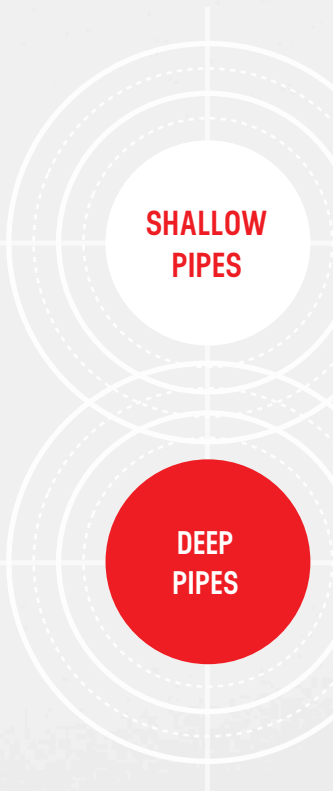
COMPACT AND FLEXIBLE SYSTEM – Only 15 kg

COBRA WIRELESS

GPR

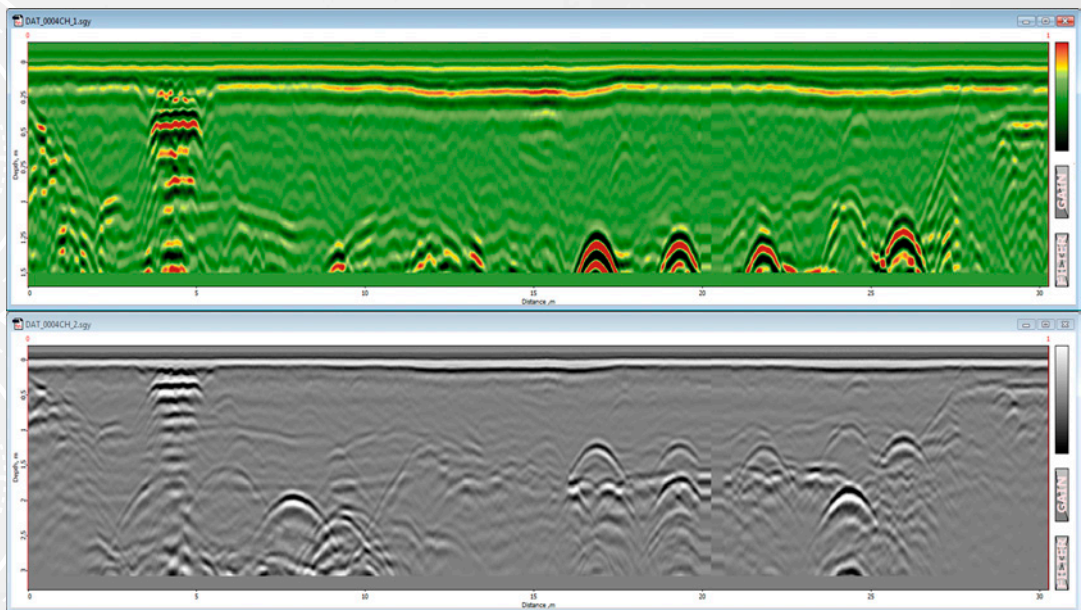
Detect shallow
& deep targets

IN ONE GO



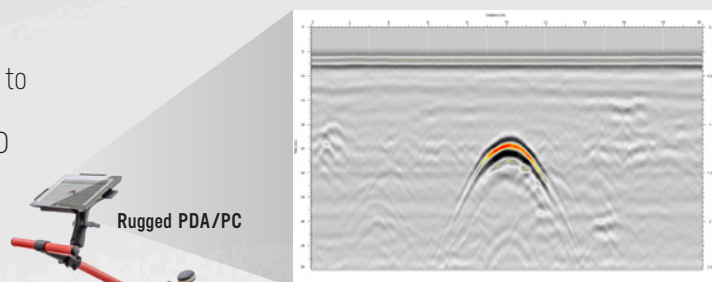
SHALLOW
PIPES

DEEP
PIPES



THE SMART GPR

The **COBRA WIRELESS GPR** collects data from hundred thousands of pulse reflections each second to help researchers identify objects below ground. It works in a multi frequency band from 100 to 900 MHz, thus replacing 2-3 antennas with different frequencies used by other and older GPR systems.



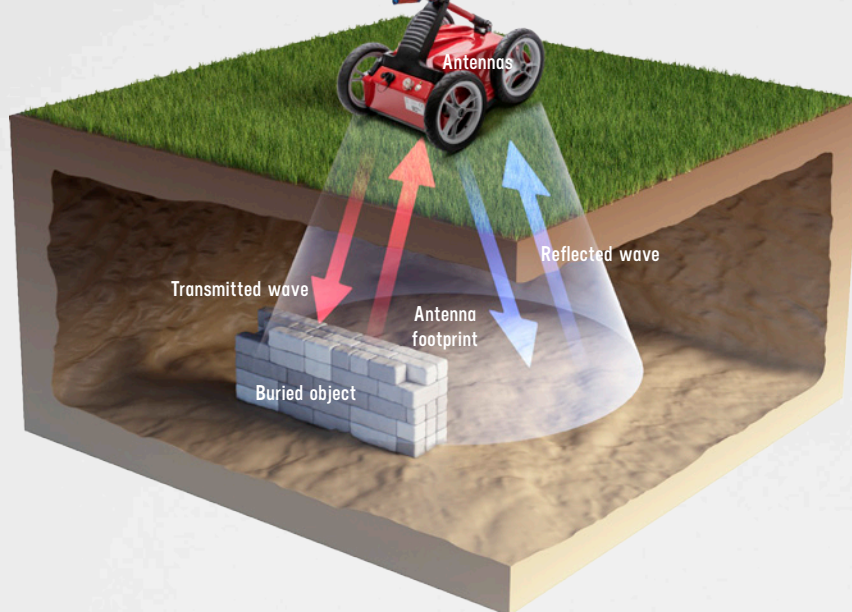
2D Radar profile, vertical view

HOW IT WORKS

An antenna sends pulses of radar energy into the ground and another receives the information that bounces back up.

DEPTH PENETRATION

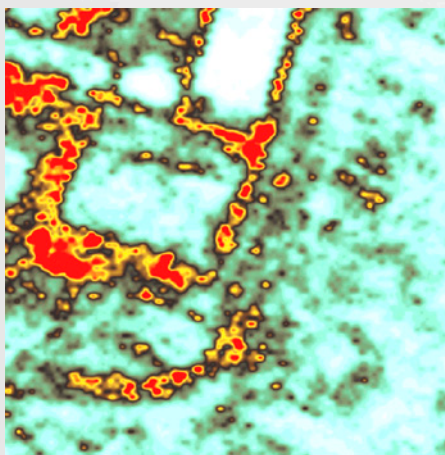
The depth penetration depends on frequency, water content and material conductivity. The typical penetration with Cobra Wireless GPR is 1,5-4,5 m. The maximum penetration is 10 m or 500 ns.



3-D RADAR DEPTH SLICE, HORIZONTAL VIEW

A 3-D software translates several 2-D radar profiles into a 3-D map, depth slice, at different depths. For full 3-D, the spacing between 2-D survey lines must be very close ($\lambda/4$).

The depth slice below shows a buried Roman building wall remains, at Carnuntum, Austria.



Buried remains of a building at 2 m depth shown as a 20 cm depth slice. Survey map: 40 square meters, based on 40 m long GPR-profiles separated by 50 cm



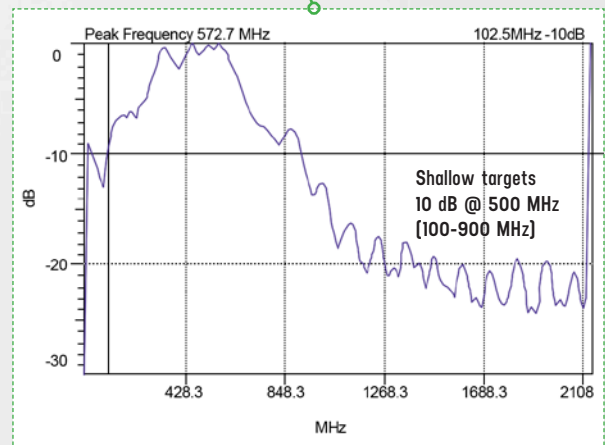
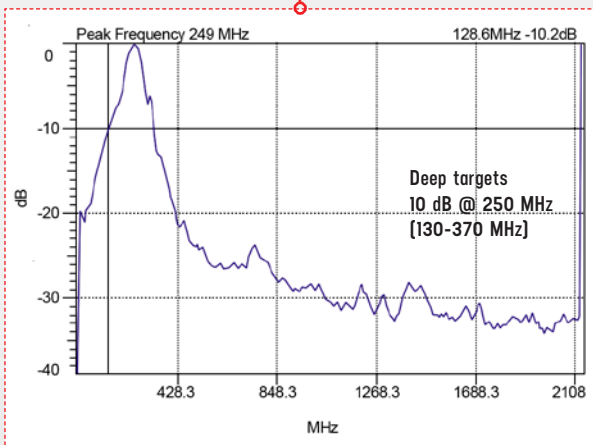
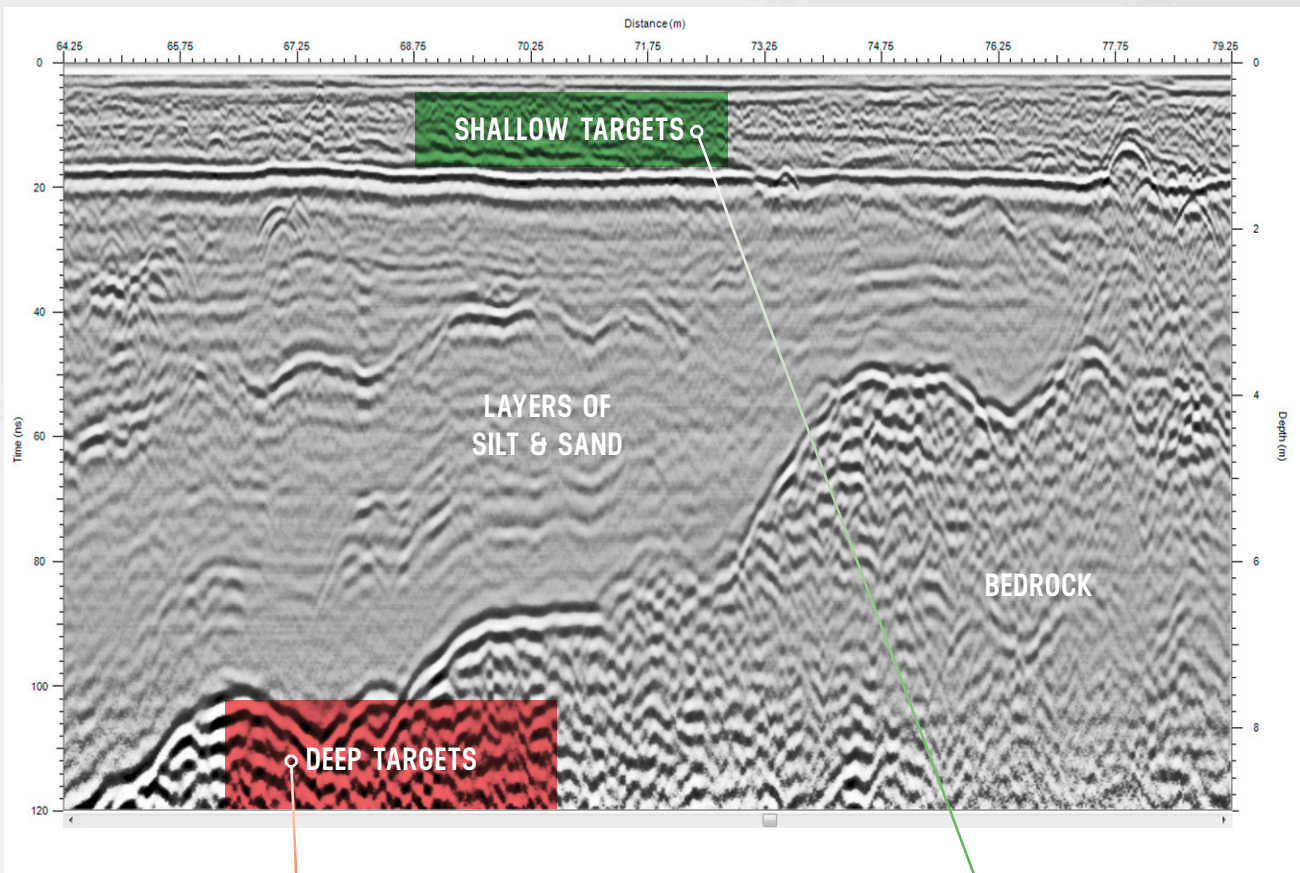
Photograph of buried wall remains after excavation

MIXED DATA

When a **SINGLE FILE** is all you want

The **COBRA WIRELESS GPR** Mixed or Blend Mode combines high resolution near surface data with deep target data in one single view. With this method both channels are combined in one single data file using the full bandwidth of the **COBRA WIRELESS GPR**, 100-900 MHz.

This is our recommended method compared to using 2 separate files, one for shallow and the other one for deep data.



THE CHOICE IS **YOURS**

Pick your control unit,
from rugged PDAs to
PCs



MESA RUGGED NOTEPAD™

The Mesa is a data collection powerhouse with a massive 5.7 inch VGA screen, yet still feels like a compact handheld at the end of the long work day. To make life even better, the Mesa comes with a speedy Windows® Embedded Handheld 6.5 operating system that features a finger-friendly onscreen keyboard as well as a built in GPS.

The Mesa is fully waterproof and dustproof, earning it an IP67 rating. It is also tested to MIL-STD-810G for water, humidity, sand and dust, vibration, altitude, shock, and temperature.

The Mesa provides a battery life that lasts all day (up to 16 hours), and is rugged enough to use as a wheel chock if the truck starts to roll.

ALGIZ® 10X

The powerful Algiz® 10X rugged tablet PC runs sophisticated technology and can withstand weather elements and harsh handling - a perfect match for today's mobile workforce. It operates on a powerful Intel® Atom™ N2800 dual-core processor, with a 128 GB SSD and 4 GB of DDR3 RAM, offering top-of-the-line computing capability and massive storage capacity. It runs Windows® 7 Ultimate.

The Algiz 10X features a brilliant 10.1-inch touchscreen that's perfect for field professionals.

The Algiz 10X is a lightweight rugged device at just 1,3 kg, and it's only 32 mm thick. It's IP65-rated and meets stringent MIL-STD-810G military standards for protecting against dust, water, vibrations, drops, extreme temperatures and varying altitudes.

With its integrated u-blox® GPS receiver and WAAS/EGNOS/MSAS capability, the Algiz 10X is also a powerful and accurate tool for mapping and surveying. The Algiz 10X offers hot-swappable capability with a lithium-ion battery pack lets you go all day without stopping or shutting down.





COBRA WIRELESS GPR KIT

includes all software needed both
for data collection and post processing.

DAQ SOFTWARE is included for both PDA and PC.

Recommended rugged computers with
excellent WiFi performance pictured to the left.

Rugged computers are delivered with
TACTICAL CART MOUNTS AND CRADLES.

APPLICATIONS & USES

Just like X-Ray and ultrasound can image the inside of your body, the **COBRA WIRELESS GPR** can be used to see the inside of different materials and structures in numerous ways.



INFRASTRUCTURE & UTILITY MAPPING

Inspect internal structures and identify voids.
Works with roads, airports, bridges, tunnels, railways dams and buildings.
Locate plastic-, concrete-, clay- or metal pipes
Map concrete before drilling, cutting or coring.
Detect obstacles in front of directional drilling operations. Find water leaks and illegal connections.



SNOW & ICE

Airborne mapping of snow- and ice thickness.
Find crevasses and avalanche victims.
Profile ice roads.



ENVIRONMENTAL

Locate hazardous waste,
UST-location.
Delineation of contaminant
plumes and product spills.
Map shallow lakes and rivers.





GEOLOGY & MINING

Locate gemstone pockets in pegmatite.
Find kimberlite, lateritic nickel.
Map internal structures and voids in soil.
Locate cracks in bedrock and building stones.

AGRICULTURE & FORESTRY

Locate agricultural and golf-green drainage tiles.
Determine soil water content and conductivity.
Map tree roots and rot in wood.



ARCHEOLOGY & FORENSICS

Pre-excavation mapping of buried structures, foundations, burial sites and chambers.
One of Radarteams most famous projects was when we located a 20.000 year old woolly mammoth, well preserved in the permafrost ground of Siberia.
The project was shown on Discovery Channel and can be found on Youtube with the search term "Raising the Mammoth pt. 2"

MILITARY & SECURITY

Locate tunnels, bunkers, hidden weapons and drugs.
Find land mines and unexploded ordnance (UXO).
Through wall imaging.
Rescue operations; locate trapped victims under collapsed buildings and landslides.



It penetrates **0-10 meters**

through the ground.

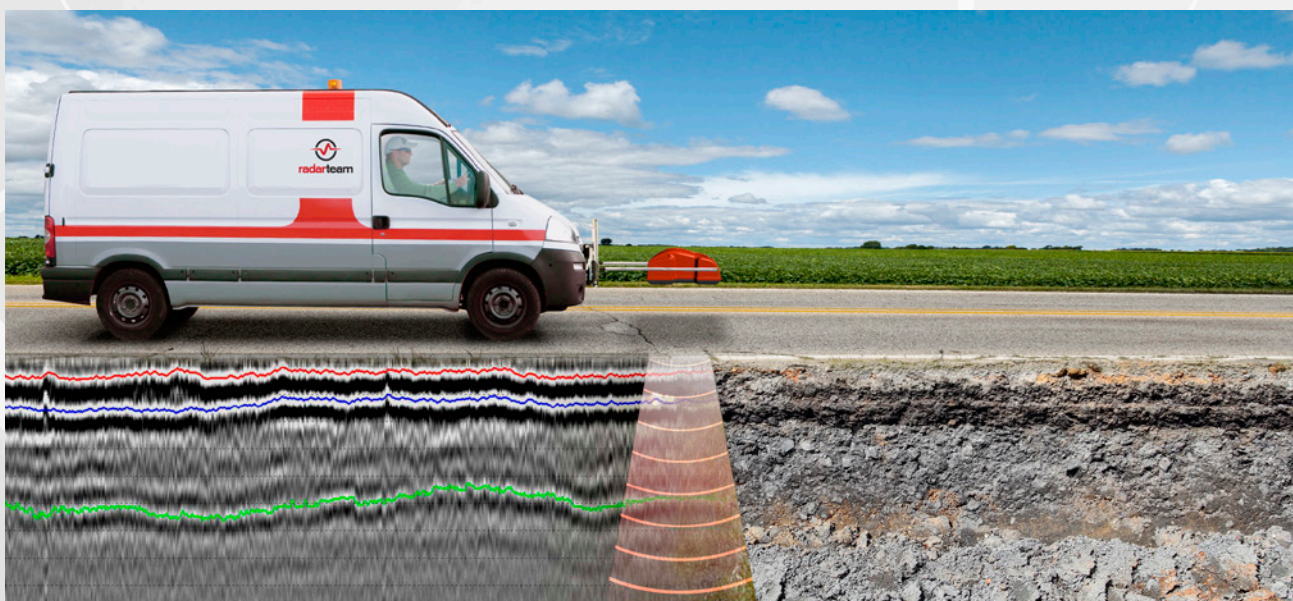
Airborne like a soaring eagle, aircoupled for speed or firmly placed on the ground.



THE SHAPE SHIFTER



COBRA WIRELESS GPR in standard operation.
Perfectly suited for flat open areas, moderate terrain and
rugged locations.



THE NEED FOR SPEED

COBRA WIRELESS GPR

is perfect for high speed surveys of road- and railways thanks to aircoupled performance.

A multitude of different mounting options for vehicles makes your surveys possible in almost any way imaginable.



**WE ARE
AIRBORNE**





COBRA WIRELESS GPR

is ideal for airborne surveys.

Wireless, compact and lightweight with excellent data quality.

Taking to the skies has never been this easy.

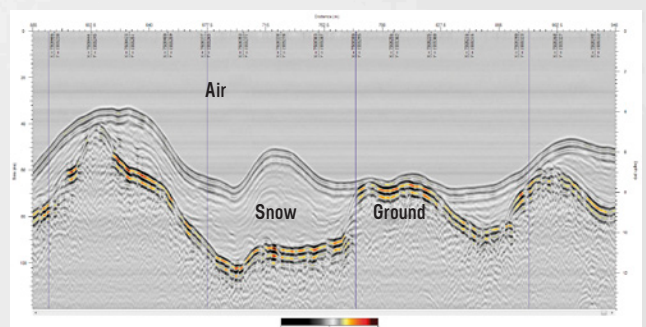


EXPERIENCE

Radarteam is probably the most experienced company in the world when it comes to airborne snow and ice applications with GPR. A total of more than 15,000 km of surveys with Cobra Wireless GPR and its predecessors HBD-350 and Cobra Locator GPR has been performed as of 2014.

The most common airborne application is snow surveys to measure the water content in snow. We have discovered a unique correlation between frequency and RDP-value, TWT and the water content in snow

Ice roads are important transportation routes in the arctic regions to support mining operations. Airborne GPR profiling provides rapid ice thickness measurements and assures safe transportation on ice roads.



COBRA WIRELESS GPR – TECHNICAL SPECIFICATIONS

ANTENNA / GPR 2 channel Ground Penetrating Radar system with shielded antennas

| | |
|----------------------------|--|
| Antenna type | Shielded resistively loaded. Both air- and ground-coupled operation. |
| Peak frequency | Used for RDP-value calibration |
| Operating bandwidth | 100-900 MHz |
| System performance | 174 dB |
| Applied voltage | 400 V |
| Sample rate | 100.000 samples/second |
| Scan rate | 1-100 scans/s per channel @ 512 samples/scan |
| Sample output | 16 bit digital raw data |

CONTROL UNIT / CU Selectable PC/PDA, Rugged, MIL-STD-81F/G, water- and dust resistant, IP-65 or IP-67 with bundled data acquisition. DAQ-software for control, display, processing and storage of GPR-data.

| | |
|---------------------------|--|
| Data format | Standard Geophysical SEGY Data Format [.sgy] |
| Data channels | 1 or 2 with individual settings for depth, filter and gain |
| Vertical filters | Off, Weak, Strong and Very Strong |
| Horizontal filters | Stacking, Background removal |
| Gain points | 1- 10 Linear gain |
| Gain levels | 0 to +60 dB |
| Data storage | Raw data storage with memory for Gain used |
| Data file size | Limited only by available HDD-space |

SURVEY CART Push and Pull non-metallic handle and support, tactical RAM-mount, cradle for recommended and purchased rugged PDA/PC, 12" quick release non-inflatable wheels. High resolution SW-encoder.

ENVIRONMENTAL

| | |
|---------------------------|------------------------------------|
| Temperature | -20°C to 40°C internal temperature |
| Humidity | 96% non-condensing |
| Ingress protection | IP68 connectors |

MECHANICAL

| | |
|-------------------------|-----------------|
| Size [L x W x H] | 60 x 52 x 29 cm |
| Weight | 15 kg |

OPERATING

| | |
|----------------------------|--|
| Operating platforms | Airborne operation, high speed air-coupled operation, ground-coupled operation |
| Battery | Integrated 73 Wh Li-Ion |
| Operating time | 8 hours |
| Operating mode | Manual [1-100 scans/s], Distance [SW-encoder] with or without GPS |
| GPS positions | GPS positions integrated with GPR-data for every scan in both time- and distance mode |
| Operating depth | 0-2000 ns selectable. Typical 0-500 ns. Depth range 0 - 10 m depending on ground properties. |

ACCESSORIES

| | |
|-----------------|--|
| Hardware | Helicopter survey kit, Road/Railway kit, Transport case, High accuracy GPS, Harness |
| Software | GPR Data Acquisition software included [PRISM] for 2 channel operation with PC and [PRISM Mobile] for PDA and 1 channel operation. PRISM Post processing software with 3d export module [Voxler, Reflex 3d, GPRslice]. |