

UPEX® 745 P²I

Stationary PI-System

- System for surface and borehole inspection
- Flexible configuration
- Operation under severe boundary conditions
- Alternative to passive magnetics
- Higher significance for evaluation of contaminated sites



General

The UPEX® 745 P²I is a deep reaching active search system based on the electro-magnetic Pulse Induction Principle. The system is intended for detection of ferromagnetic and non-ferromagnetic metal objects, especially in BAC and geophysical underground inspection.

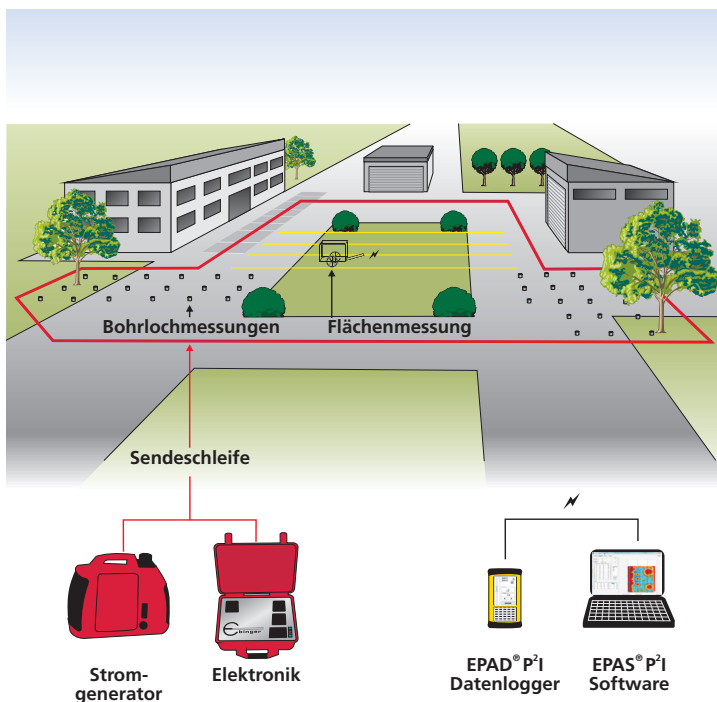
Constructional features

The UPEX® 745 P²I consists of a stationary transmitter loop and a mobile receiver component, available in two different versions (area or borehole) with components for data recording and data interpretation.

Application

The development of the search system UPEX® 745 P²I was initiated to offer a technical solution where conventional detection technique fails due to adverse conditions. The so-called magnetometers represent a well-established technology. They are based on a passive magnetic method, which reaches its limits as soon as the magnetic noise resp. the local interference is stronger than the magnetic signature of the detection object. In BAC non-magnetic resp. magnetically indifferent bombs and munitions are known. This fact is worth to be discussed more in depth. Active methods failed often in high metal impact areas, on magnetic ground or near high EMI influences.

Due to the dimensioning of the UPEX® 745 P²I system metal objects are detected at larger depths than with the known large loops with mobile transmitter/receiver antennas. Furthermore only metal objects with a certain size were detected: metal fragments of small to medium size were suppressed or indicated in a reduced manner. The most important parameters of the transmitter and receiver component (repetition frequency, pulse width, gain characteristics) can be changed and adapted to different requirements. By the variation of the repetition frequency electromagnetic interferences from near electrical cables are reduced or completely eliminated.



P²I-procedure



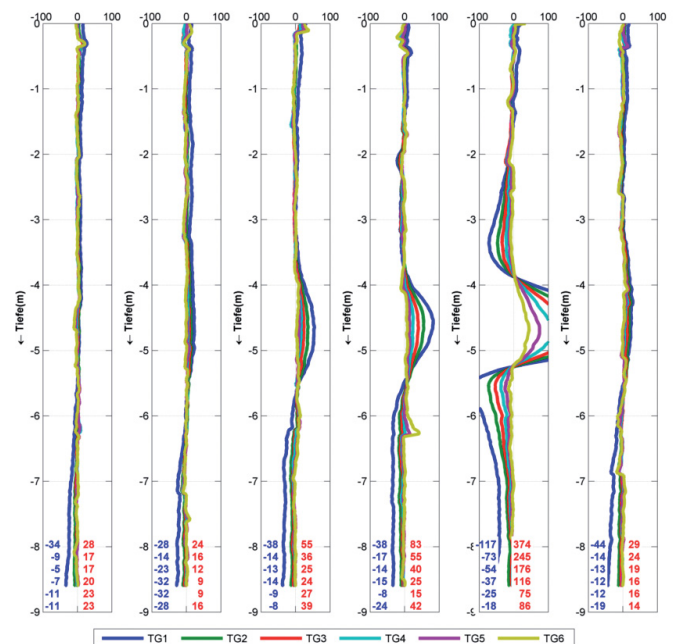
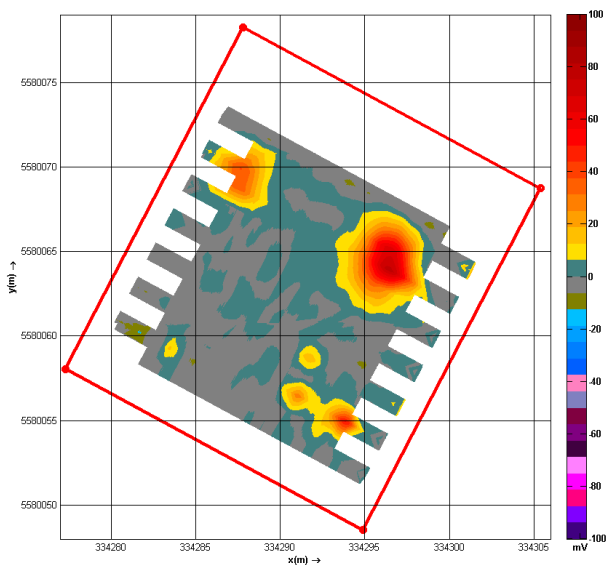
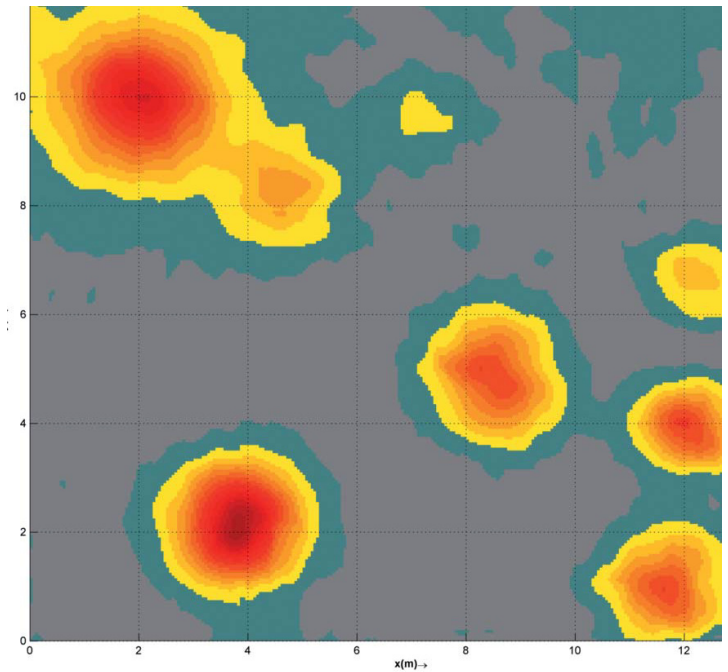
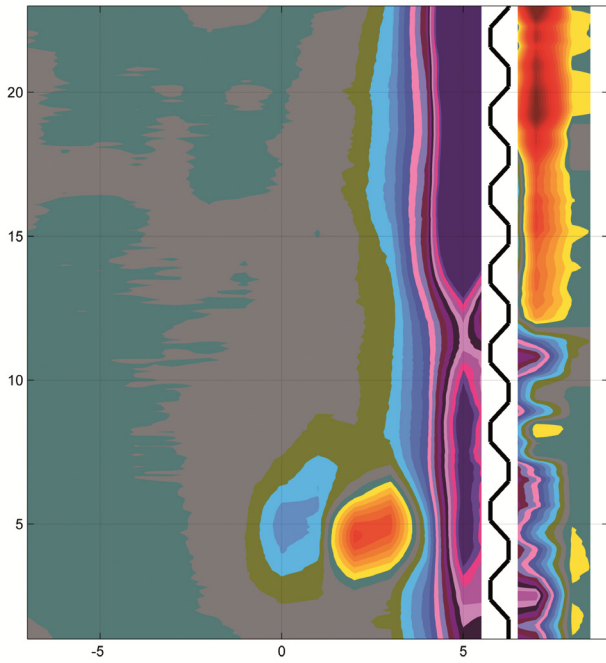
Borehole exploration

Measurements under difficult conditions

Surface inspection next to a sheet pile wall using a new EBINGER software (patent pending). Anomalies visualized despite highly interfered area.

UPEX® Software

The new EBINGER software supports all applications of our active technique: stationary and mobile, area survey and borehole mode.



Surface mapping

Borehole profile

Surface inspection system

The surface version (UPEX® 745 P2I AREA) consists of a mobile square air-core coil with an edge length of one meter. The sensing element is moved over the area surrounded by the stationary transmitter loop to map secondary magnetic fields of metal objects.

The limits of the detection depth could not entirely be defined so far. Magnetic indifferent bombs, which could not be detected by magnetometers have been located by the stationary UPEX® 745 P2I system in depths to 5 m.

The UPEX® 745 P2I P2I consists of following modules:

- Base module BASE
- Area module AREA
- Borehole module BOREHOLE

The modules can be combined as required:

Surface system	BASE AREA
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Borehole system

The borehole version (UPEX® 745 P2I BOREHOLE) consists of a sensing element which is wrapped onto an iron core. It is foreseen to be applied as a cylindrical borehole probe in boreholes to detect secondary magnetic fields of metal objects.

Under optimal conditions the electromagnetic impact of the primary field from a 20 m x 20 m transmitter loop reaches down to a depth of approx. 9 m. If larger depths are required the 40 m x 40 m transmitter loop may be chosen as it can reach down to a depth of 15 m.

Borehole inspection system	BASE BOREHOLE
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Surface inspection system



Borehole system

The surface system consists of the following components:

Transmitter:

1. Power generator (Honda) 1kW
2. Power cable on reel 25m, 230 V
3. Transmitter electronic cased
4. Connection cable transmitter to P2I master reel
5. MASTER transmitter loop
6. SLAVE transmitter loop

Receiver/Data recording items:

7. Bluetooth operation unit for cordless data transmission
8. EPAD®-P2I (PDA field computer with software for data recording)
9. Receiver electronic
10. Differential receiving loop 1m² for P²I
11. P²I/DF receiving loops, GRP

The borehole system consists of the components:

Receiver:

1. Power generator (Honda) 1kW
2. Power cable on reel 25m, 230 V
3. Transmitter electronic cased
4. Connection cable transmitter to P2I master reel
5. MASTER transmitter loop
6. SLAVE transmitter loop

Receiver/Data recording:

7. Bluetooth operation unit for cordless data transmission
8. EPAD®-P2I (PDA field computer with software for data recording)
9. Receiver electronic
10. Borehole probe 550 mm for P²I
11. Synchronizer cable P²I-transmitter and receiver
12. Extension cable for P²I synchronizer cable

Technical Data:

Power supply	Power generator 230V/ 0,9 kW Rechargeable battery 2 x 12V, 7,2 Ah	approx. 8 h (without refuel) approx. 2.5 h
Dimensions	Power generator Transmitter, cased Transmitter loop, 20 m x 20 m, on 1 reel Transmitter loop, 40 m x 40 m on 2 reels Standard borehole probe Case with receiver and accessories	approx. 450 mm x 240 mm x 380 mm approx. 486 mm x 392 mm x 192 mm approx. 500 mm x 380 mm x 300 mm approx. 500 mm x 380 mm x 300 mm approx. 800 mm x 40 mm approx. 820 mm x 330 mm x 155 mm
Weight	Power generator Transmitter, cased, with rechargeable batteries Transmitter loop, 20 m x 20 m, on 1 reel Transmitter loop, 40 m x 40 m, on 2 reels Standard borehole probe	approx. 13,0 kg approx. 14,0 kg approx. 18,5 kg approx. 18,5 kg (each) approx. 1,3 kg



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