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## MIRA- Ultrasonic Imaging System



**Figure 1-** MIRA system shown with the revolutionary probe (right and bottom)

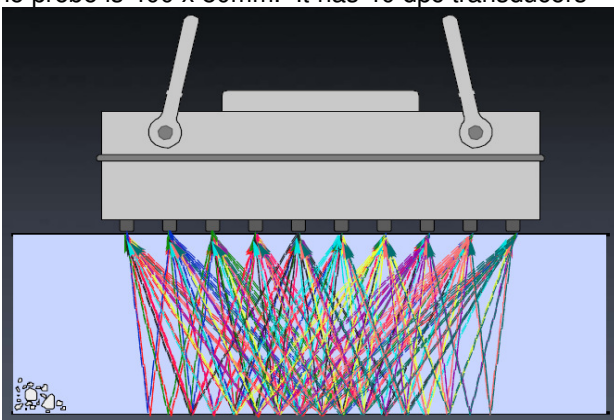
### Introduction

**The age of full concrete imaging has arrived.**

The revolutionary MIRA Ultrasonic Imaging System brings the future to the present. The system uses ultrasonic pulse echo technology to locate voids, cracking and concrete thickness.

### The System

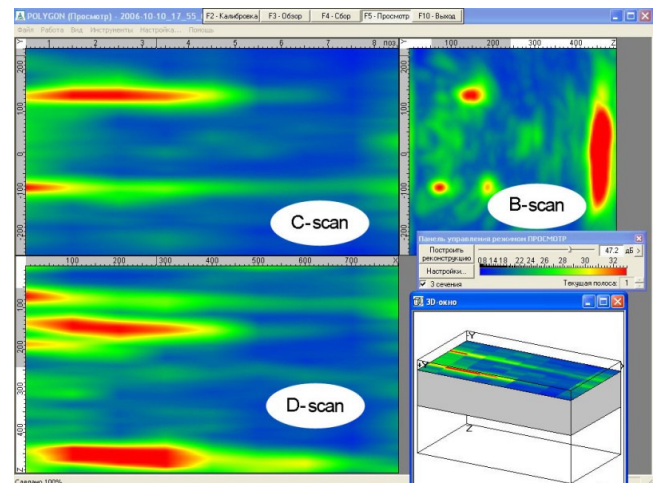
The probe is 400 x 80mm. It has 40 dpc transducers



**Figure 2-** Each of the 40 transducer sends and receives pulses forming 90 individual signals to construct an image

squeezed onto its underside. Each transducer is spring-loaded to contour to the surface. Every time it fires it all 40 of the transducers cover every angle beneath the probe.

The probe has a wireless access point which beams the data straight back to your laptop. Once on the laptop the SAFT software creates the image. The images can be shown as slices through the x,y and z axes as well as a 3D solid.



**Figure 3-** The SAFT software displays 4 images of the concrete along the 3 axes and as a 3D solid

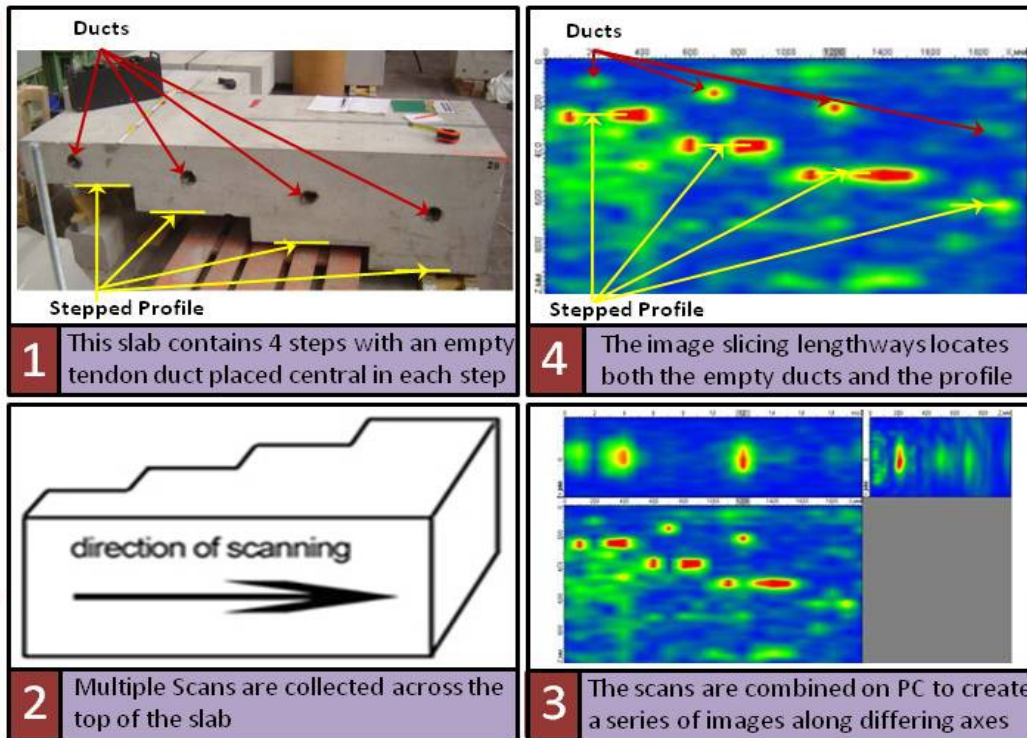
### Benefits

The system affords the following benefits to the user:

- Full Concrete Imaging for easy interpretation
- Simple operation
- Find: the concrete thickness, voids, and cracking
- Very accurate depths calculated using a very simple calibration to any site in under 20 seconds
- No surface preparation required. Not even coupling paste
- Use the system on any shape, profile and thicknesses up to 1.5m
- Automatically combines multiple scans together making an indefinitely large scan area
- Wireless data transfer to PC allowing single operator
- Ceramic tipped transducer are very rugged

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## Stepped Slab with Empty Tendon Ducts



**Ducts**

**Stepped Profile**

**1** This slab contains 4 steps with an empty tendon duct placed central in each step

**4** The image slicing lengthways locates both the empty ducts and the profile

**direction of scanning**

**2** Multiple Scans are collected across the top of the slab

**3** The scans are combined on PC to create a series of images along differing axes

### Case Study

The images above describe a case study collected from the BAM institute in Germany. The test specimen is a stepped slab with empty tendon ducts placed in each of the steps. Data was collected using the MIRA across the top surface of the slab.

Once the data was beamed to the laptop images cutting the concrete on all three axes show an accurate representation of the concrete's interior. In particular each of the four stepped thicknesses along with the location of the empty ducts.

### Form supplied

The full system contains:

- Antenna array
- Controlling Laptop in case
- Power supply unit and wireless connection unit
- Network cable to hardwire unit
- Cable for connection of START button
- Operation manual

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- CD with software and user's manual
- Transportation case

### About PCTE

PCTE have over 30years experience in the measurement and testing of concrete. With experience in research, consulting and construction they are able to assist you in reviewing the issues and developing solutions. PCTE can provide more than just the equipment. They can provide leading technical support for your business.

### Other Equipment

The Olson Instrument range also includes the CTG, Freedom Data PC and DAS as well as the resonance tester.

The full Proceq range of equipment is available for insitu non destructive concrete measurement, including Schmidt Hammers, Covermeters, Half Potentials, Resistivity, Ultrasonics and Permeability.

We also supply Intelli-Rock maturity, temp and humidity logging systems, corrosion rate monitoring equipment, Ground Penetrating Radar.