

Quantitative 3D Imaging of Concrete Defects

Challenges with Concrete Inspection

Large concrete assets such as high-rise buildings and bridges require inspection at various stages in their lifecycle to ensure their integrity and safety. Two pain points when inspecting such structures are the following:

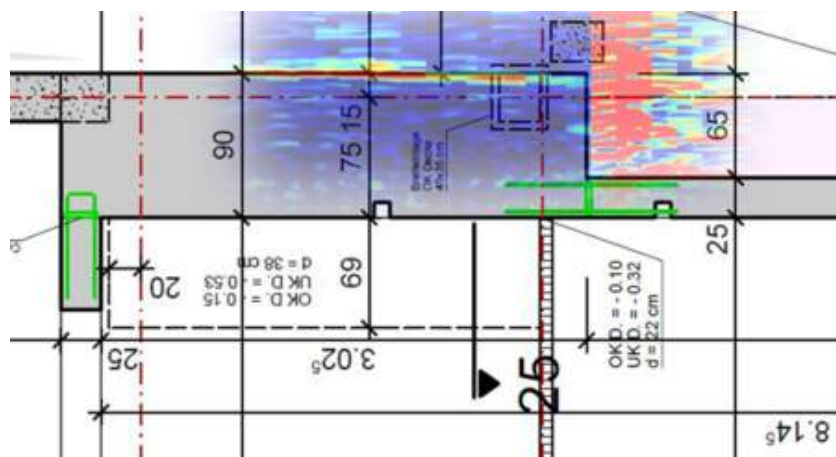
- After performing an inspection, how can a decision be made on whether the asset is safe or not?
- Once an inspection job, and possibly the ensuing repair job, is completed, how to store all necessary information about this work so that any stakeholder can access it in the future, even 20, 30 years down the road?

Traditional Solutions

Ultrasonic imaging of concrete is a powerful inspection method from which images of the internal structure are obtained. However image quality can be poor with low signal-to-noise ratio and interpretation of these images is often subjective.

Results are stored in a disparate way – on instruments themselves, on USB sticks, computers etc. Notes are often made by hand or not at all, with important information only being stored in people’s heads. Concrete structures last longer than most consumer electronics and than most people’s employment, so important information is inevitably impossible to retrieve when it is needed in 5, 10, 20 years time. Even in situations where data is stored appropriately, sufficient location information is rarely stored alongside it.

Screening Eagle Technology Solutions



Screening Eagle Technology’s portable ultrasonic imaging device, [Pundit PD8000](#), is used to generate 2D and 3D images of concrete structures up to 2m thick. The images are generated immediately on site. The high signal-to-noise ratio and advanced imaging algorithms produce high quality images from which defects can be quickly identified and tagged. Views and maps are also instantly available in the field.

Using the intuitive [Pundit Live Array app](#), results are easy to calibrate and defects can be reliably classified in terms of position and extent. Defect sizes can then be compared against acceptable limits. Decisions regarding the status of the structure and any necessary repair, can be made confidently.

Inspection data is stored securely on the cloud and can be accessed from anywhere in the world. There is no need to manually transfer data and no risk of losing data if equipment is damaged on site.

Using Screening Eagle Technology's latest software solution, [INSPECT](#), data from the Pundit PD8000 can be stored together with precise 3D location and other information e.g. repair procedure, visual inspection results and more. Multiple data sets from the same location e.g. before/after repair can be stored in a clear way. [The Inspect app](#) can also be used to record the next inspection date and keep teams up-to-date on the status of a structure.



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