This technique is used for special tests to monitor foundations which are not cylindrical (i.e. not piles) and in complex, circular substructures where mechanical impedance cannot be used. It is based on sonic reflection, and uses geophysical digital processing techniques to analyse the propagation of compression and bending waves reflected by the end of substructure foundations via changes in impedance. The same principle is used as in mechanical impedance, but ultra-seismic testing requires the acquisition and recording of data from several input channels

The method generates a vertical profile which gives a graphic view of the depth of foundations, with the reflections caused by upward and downward compression and bending movements. The top or bottom of the structure is struck (horizontally or vertically) and the resulting wave movement is recorded at regular intervals towards the bottom of the foundation element of the structure.