

# CASE STUDY

## FALKIRK



A week long ground investigation was undertaken at Grangemouth Refinery, Scotland, as part of the refinery's FREON replacement scheme.

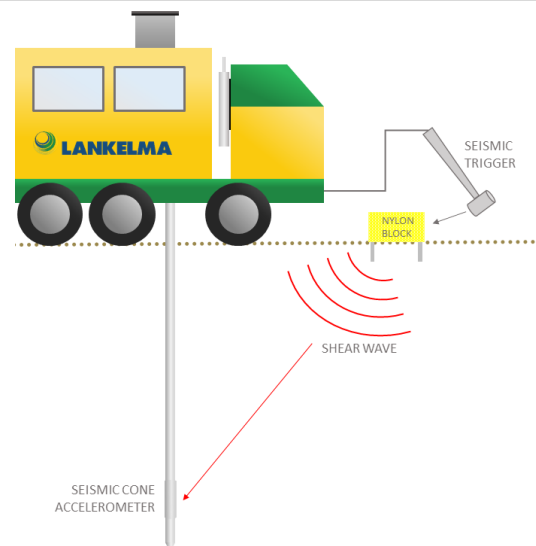
Working on behalf of IKM Consulting, Lankelma carried out four seismic tests and 10 piezocone tests to refusal to better understand the ground prior to piling.

Seismic cone penetration testing provides a rapid and cost-effective method for measuring the shear wave velocity of soils as well as the standard tip, sleeve and pore pressure measurements associated with standard CPT's.

The testing works by generating a seismic wave at the surface by striking Lankelma's seismic wave generator, comprised of a nylon block and ground anchors. The shear waves produced are then recorded by the seismic penetrometer at known depths and are repeated at least two times on both the left and right side of the seismic block to maximise the signal to noise ratio.

During the ground investigation the seismic and piezocone penetrometers typically refused between 40 and 60 m,

PROJECT SPECIFICATION	
LOCATION	Grangemouth Refinery, Falkirk
CLIENT	IKM Consulting
DATE OF WORKS	August - September 2014
TESTING UNDERTAKEN	CPT Seismic
RIG	UK3



penetrating through 7 m of made ground, 11 m of soft clay and into sands.

The 15 cm<sup>2</sup> seismic cone was used successfully at Grangemouth picking up seismic signals at 1 m intervals to a depth of 37 m, the deepest Lankelma has ever recorded.

The readings recorded then enabled Lankelma to measure the shear wave velocity of the soil and build a seismic profile of the ground conditions accordingly. In turn allowing for the assessment of the small strain shear modulus, an essential input for the prediction of ground surface motions.

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