



IDENTIFICATION OF HETEROGENEITY WITHIN CHALK FOR A WINDFARM DEVELOPMENT



On behalf of **EDF EN**, a French energy company, Geotek were commissioned to investigate how **MSCL and X-ray** could be used to identify heterogeneity within chalk formations

AIMS

- Identify flint clasts within chalk sub-samples using X-ray techniques
- Identify heterogeneities within the chalk, using techniques on the MSCL
- Could MSCL and X-ray data be established as a technique to identify areas where flint or heterogeneities within the core is present ahead of laboratory testing?

TECHNIQUES

The chalk sub-samples were securely held within Geotek's X-ray Computer Tomography machine (MSCL-XCT), which is specially designed and calibrated for core samples.

A Standard Multi-Sensor Core Logger (MSCL-S) was then used to acquire P-wave velocity and magnetic susceptibility data at 0.5 cm intervals through the core samples.

RESULTS

Chalk and flint have very similar densities, therefore 3D CT scanning was conducted in order to differentiate the flint clasts from the chalk matrix.

The CT scans also revealed lower relative density pockets within the flint possibly representing pockets of less cemented material.

RESULTS CONTINUED

The X-ray CT and MSCL data are able to image and identify flint clasts within chalk from elevated P-wave velocities and decreases in magnetic susceptibility. Furthermore, Geotek were able to image small-scale heterogeneities within the chalk, which correlated with increased magnetic susceptibility.

These increases in magnetic susceptibility within the chalk could be used as a marker bed for future borehole correlation to determine stratigraphic elevation within the chalk sequence.

