

## THE DETECTION OF WINDING MOVEMENTS IN SINGLE PHASE POWER TRANSFORMERS

The report summarises the preliminary work carried out to establish a simple on-site test for the detection of winding movements in single phase power transformers.

The principle behind the various techniques considered is to establish the response of a transformer winding to a given signal, or series of signals, whilst the transformer is in an undamaged state. This response then characterises the state of the transformer winding and is referred to as the transformer signature or fingerprint. Subsequent displacement of the windings will result in a localised change in the inter-turn winding capacitance and this will generally change the shape of the transformer's fingerprint.

Three experimental techniques have been examined in order to establish a suitable response which is sensitive to slight movements of the transformer windings and which will enable the severity of any such movement to be assessed. The report discusses these three techniques, draws conclusions and makes recommendations for follow up work.