Claims

1. A non-clamping method for identification of target dead underground power cable, the method comprising:

forming a complete circuit by connecting a transmitter to two of a plurality of conductors of a target dead power cable at a first end thereof;

short-circuiting and grounding the plurality of conductors at a second end of the target dead power cable;

injecting an audio frequency current signal from the transmitter into the complete circuit for generating an audio frequency magnetic flux signal on a surface of the target dead power cable;

within a pit which at least partially exposes a plurality of underground power cables:

detecting a first audio frequency magnetic flux signal on a surface of a random first one of the underground power cables;

detecting a second plurality of audio frequency magnetic flux signals on respective surfaces of some of the underground power cables being spatially-adjacent to the first one of the underground power cables;

identifying the first one of the underground power cables as the target dead power cable if a peak amplitude of the first audio frequency magnetic flux signal as displayed on a display device exceeds any peak amplitude of the second plurality of audio frequency magnetic flux signals as displayed on the display device by more than about 50%,

wherein the displayed peak amplitude of the first audio frequency magnetic flux signal and the displayed peak amplitude of the second plurality of audio frequency magnetic flux signals are digitised based on a plurality of piecewise linear sensitivity relationships, and

wherein the injected audio frequency current signal is encoded with a shared key which is exclusively stored in the transmitter and a receiver paired therewith,

wherein detecting the first audio frequency magnetic flux signal further includes:

extracting a first decoded key from the first audio frequency magnetic flux signal,

if the first decoded key matches the shared key, displaying an amplitude of the first audio frequency magnetic flux signal on the display device, and

if the first decoded key does not match the shared key, presenting a notification.

wherein detecting the second plurality of audio frequency magnetic flux signals further includes:

extracting a second decoded key from each of the second plurality of audio frequency magnetic flux signals,

if the second decoded key matches the shared key, displaying an amplitude of the corresponding one of the second audio frequency magnetic flux signals on the display device, and

if the second decoded key does not match the shared key, presenting the notification.

2. The method of claim 1, further comprising:

before detecting the first audio frequency magnetic flux signal on the surface of the random first one of the underground power cables, performing a complete circuit verification on the two of the plurality of conductors of the target dead power cable.

3. The method of any of claims 1 to 2, wherein detecting the first audio frequency magnetic flux signal further includes:

broadcasting the detected first audio frequency magnetic flux signal over a speaker.

4. The method of claim 3, wherein detecting the first audio frequency magnetic flux signal further includes:

controlling a volume output of the speaker without affecting the peak amplitude of the first audio frequency magnetic flux signal being displayed on the display device.

5. The method of any of claims 1 to 4, wherein the first audio frequency magnetic flux signal and the second plurality of audio frequency magnetic flux signals have substantially same frequency as the injected audio frequency current signal.

6. The method of claim 1, wherein presenting the notification includes at least one of displaying an error indication on the display device and inactivating the display device.

7. The method of any of claims 1 to 5, wherein detecting the first audio frequency magnetic flux signal further includes:

longitudinally running a pick-up coil along a first lengthwise position on the surface of the first cable,

wherein detecting the second plurality of audio frequency magnetic flux signals further includes:

longitudinally running the pick-up coil along a plurality of second lengthwise positions on the respective surfaces of the some of the underground power cables being spatially-adjacent to the first one of the underground power cables.

8. The method of claim 7, wherein the pick-up coil is geometrically centred on an arc-shaped magnetic shield.

9. The method of any of claims 1 to 8, further comprising:

grounding an armour of the target dead power cable at the first and the second end thereof.