Electric floor heat earth leakage monitor

This circuit may look familiar to some since it's very similar to the warbling alarm in Ideas for Experimenters, ETI March 1980, wrote **Alec Phillips** of **Myrtleford Victoria**.

I made it in response to a request from an electrician friend of mine, who needed an audible monitor connected to electric floor heat coils while cement was being poured. One clip is connected to the outer earth casing and the other clip is connected to the centre element.

The circuit is basic and self explanatory. I mounted it in a Clipsal 265/3 PVC box, 102 mm x 102 mm x 70 mm, and used a 200 mW, 57 mm, 8R speaker and a 9 V battery.

Normally the unit just ticks at about 1 kHz but if the heating coil is damaged by a shovel or a cement vibrator, the frequency suddenly increases to approximately 400 Hz, depending on the amount of resistance in the short circuit. Also, any small leakage of ten milliohms or less, will naturally increase the frequency of the output a small, but notable amount.

A special note: this will not do away with the final testing with a high voltage megger after the cement pour is completed, but it has proved very useful during a pour.