



Transmission line demonstration: another accident

In a recent accident a teacher was burnt, and needed hospital treatment, when attempting to demonstrate why power is best transmitted at a high voltage. He was using a method commonly described in the older physics books, in which a 12 V a.c. supply is stepped up to about 240 V, transmitted through a metre or so of bare wires, before being stepped down to 12 V again. The teacher touched both live conductors at a potential difference of about 240 V and was unable to let go.

Several similar accidents were reported about 5 years ago, as a result of which the Health and Safety Executive wrote to all LEAs saying that this demonstration must not be carried out in a way in which it is possible to touch live conductors at a potential above about 50 V a.c. r.m.s. Most LEAs will have drawn this letter to the attention of their schools. Extracts from it appear in Chapter 3 of the second edition of *Topics in Safety* (ASE, 1988). Appendix 5 of Chapter 3 gives detailed guidance about how this demonstration may be safely accomplished in accordance with HSE recommendations.

The 'traditional' way of doing this demonstration is clearly not safe. The teachers who have had these accidents all knew that it was potentially hazardous but thought that they could avoid the problems. Nevertheless, in the heat of the moment, mistakes were made, perhaps because their attention was distracted.

The HSE will view breaches of its guidance very severely:

- any LEA or governing body which has not drawn the attention of its teachers to the HSE guidance on this is at risk of prosecution;
- any head of department who permits his/her staff to carry out the demonstration in the 'traditional' way is at risk of prosecution;
- any teacher who disregards such instructions is at risk of prosecution.

Note: See CLEAPSS and SSERC guidance. A ready-made, power-line apparatus is available from Electrosound.