

## PROBLEMS OF ERRATIC POWER SUPPLY IN AFRICA AND INDIA

Sir,

We read with interest J E Richardson's observations and solutions to the problems of erratic power supply in Africa and India (*Lepr Rev* (1987) **58**, 189–90) and wish to recount our experience of this at the Schieffelin Leprosy Research and Training Centre, Karigiri, India.

The supply of electricity to Karigiri is subject to fluctuations in voltage and, occasionally, total failure.

The problem was tackled in the following ways:

1 One of the areas in the Centre which requires a constant power supply is the laboratory. A servocontrolled, 3-phase, central voltage stabilizer supplies the entire laboratory. This takes care of gross fluctuations in voltage. A central stabilizer obviates the need for individual stabilizers, thus reducing maintenance costs.

2 A 3-phase, audiovisual power malfunction alarm is placed downstream of the central voltage stabilizer. This was designed, built and installed by us.

The unit responds to: (a) black-outs—the alarm sounds for approximately 50 secs; (b) failure in one or more phases—the alarm sounds incessantly till the fault condition is rectified or until all 3 phases subsequently fail; and (c) brown-out in 1 or more phases—the unit is designed to ignore transients to avoid nuisance tripping.

The voltage level at which this unit trips is user-definable. The buzzers are placed 50 m away from the main unit, for operational reasons. This unit was designed to operate without back-up batteries so that maintenance costs could be kept to a minimum.

3 All equipment including refrigeration and air-conditioning units are individually connected to a solid-state, over/under-voltage cut-out with a user-definable time delay of up to 10 min. The ability to individually pre-set the turn-on delay prevents simultaneous activation of all equipment when the power is restored. This prevents over-loading of the power line. In addition, refrigeration and air-conditioning equipment requires a minimum turn-on delay of 3 min to allow the refrigerant to stabilize, thus avoiding damage to the compressor. Visual indication of tripping is provided on each of the units. The prototype, built by one of us, has been functioning satisfactorily for the past 6 years. All the post-prototype units were assembled in the centre by Mr S Charles, a member of the staff, who is self-taught electronics enthusiast. The electronic components used are available locally.

4 The mains supply is monitored by the duty electrician and in the event of a black-out or prolonged brown-out, generators are activated manually. Automatic start-up systems, though available, were not incorporated since there is no requirement for emergency power. Anyone interested in detailed information about the above-mentioned devices is welcome to correspond with us.

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