

# ELECTRICITY ON THE ESTATE

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**T**ODAY, with the present price of copra, money is available for improving amenities and making life more attractive on coconut estates. However remote your estate, you need never be without the comfort and convenience of light and power, so long as petrol or diesel oil is readily available. Electrical power too, is useful for operating deep well pumps and other mechanical equipment, such as rice hullers, milking machines, cream separators, dairy-washing machines, etc. Hot water, for bathing and other uses, can be obtained from the cooling tanks of the engine. A battery-charging set for charging your car or radio battery can be included.

The amount of power available to you will depend on the size and cost of your installation. The lowest price of kerosene electric plant is now about Rs. 2,100 for the engine-generation unit, plus Rs. 2,300 for a small set of batteries to accumulate electricity, plus installation costs, and the output is about 1,000 watts (*i.e.*, 1 kw.) sufficient say for 19 lamps and a radio set.

The largest type of diesel electric power plant recommended for estate use is rated at 6 kw. and costs something over Rs. 6,850 plus costs of transportation, installation and wiring. Much more can be paid for still larger and more elaborate installations.

To determine between which of these extremes is your requirement, it is necessary to make a list of your needs and add up the power requirements. Electric lamps range from 15 watts (lavatories) to 100 watts (large rooms) and average say 40 watts each; a radio set will take about 50 watts; a hot plate 1,500 watts; an electric oven 2,000-6,000 watts, depending on its size; a water pump say 500 watts, and a 3 h.p. rice huller 2,300 watts, and each electric fan, say 50 watts. These are not all likely to be in use at the same time and you need to estimate for only about two-thirds of your total requirements which for ten, 60 watt lamps, a radio, electric oven, water pump and three fans would be a 3 kw. unit, costing about Rs. 5,000.

A number of electrical terms will be met with, of which it is necessary to know the meaning. The *Watt* is the unit of measurement of electric current, and the power developed in an electric circuit is determined by the product of the rate of flow of current and the difference of electric force or pressure, *i.e.*

Amperes × Volts	=	Watts
1 Kilowatt	=	1,000 Watts
1 Horse-power	=	746 Watts
1.51 Watt-hours	=	1,000 calories of heat

There are two main types of installation: (1) a system of accumulators or batteries which may need to be recharged daily, and (2) direct supply, which means that current is available only when the engine is running. The advantage of the former is obvious because current is available at any time, but accumulators take up a lot of space and doubled the cost of housing the plant. In order not to make the cost of batteries too excessive, low voltage current, 110 volts or even less, is used and this limits the appliances which can be used in conjunction with the set only to those of this low voltage.

Direct-current plants may be non-automatic, remote-controlled, or fully automatic. The first have to be started and stopped in the power house; the second can be operated from a switch-point in the house; and the third start themselves or stop the moment any appliance is switched on or off.

Running costs vary greatly. The larger plants are the most economical; for instance, a small 1 kilowatt kerosene-driven unit will consume about 3 pints of lamp oil per hour at full load, whereas a larger 5 kilowatt plant will consume only about twice that amount. For supplying light and power to a group of houses, the labourers lines and the office, a powerful diesel-oil engine is generally used to drive the electric generator—the oil consumption of this engine is low and diesel oil is cheap. Experiments have shown too, that during periods of emergency, such engines can be operated on coconut oil, although there are minor technical objections to its use normally.

The usual method of transmitting the electric current in estate buildings is the system of open or exposed wiring, because it is cheap, durable, and accessible. Rubber-covered or insulated wire is used and the wires are supported on porcelain knobs or two-piece cleats; a fuze box and a lightning corrector is essential. It is desirable to employ a professional wireman or electrician, otherwise the work will be done in an unsightly fashion and the wiring may not be safe from the risk of fire.

The electric power plant should be housed in a dust-free, dry, brick building which should be sited well away from the estate houses because of the noise of the engine. The engine room must be kept clean and free from dirt and rubbish. The estate watcher could be trained to operate the plant.

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