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WIND-MILL PRODUCED ELECTRICITY FOR LIGHTING FISH FARM SHED AT MANDAPAM *

The concept of using wind energy for producing electricity is not new, though its application in India is of recent origin. Denmark, Norway, England and U.S.A. utilise the wind energy for power generation from early part of this century. Our coastal areas are rich in wind energy. But this replenishable energy source is not well utilised.

A low cost wind-mill battery charger was erected at Pillaimadam lagoon about 5 km from Mandapam Camp, on the southeast coast of India to produce electricity. The electricity thus generated is being utilised to light the still hut built in the Pillaimadam lagoon in connection with the culture of fishes.

A suitably modified 12 volt-dynamo was fitted at the top of a 8 m long palmyrah trunk planted 100 m from the shore in the Pillaimadam lagoon. A teak wood plank measuring 3 m long, 10 cm wide and 3 cm thick was used as the blade of the wind-mill. It was chiselled on opposite sides and fitted to the shaft of the dynamo so that maximum rotation was obtained. The blade and the dynamo could rotate as the wind direction changed. The dynamo was connected to a 12 volt battery with 18 plates kept in the lagoon hut.

The wind rotated the blade of the wind-mill to about 800–1000 R.P.M., activating the dynamo which in turn charged the battery. A cut out (Regulator 15 ohms) was connected to the battery which automatically disconnected the dynamo and the battery when more electricity was generated. Two or three batteries could be recharged using the same wind-mill. The system could be used to light 4 or 5 numbers of 6 volts bulbs. The direct current produced can be converted into alternate current by using a converter.

Fig. 1. The wind-mill erected at the fishfarm at Mandapam.

The total cost of the device was about Rs. 3,000/- but this can be reduced by 40% if reconditioned

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materials are used instead of new ones as in the present case. The details of the cost incurred for the assembly is given below (1984 rates):

1. Palmyrah trunk 8 m	Rs.	400.00
2. Battery 12 volts (18 plates)	Rs.	1200.00
3. Dynamo 12 volts	Rs.	750.00
4. Regulator (cut out)	Rs.	75.00
5. Wire, bulbs, holder etc.	Rs.	50.00
6. Nuts and bolts	Rs.	25.00
7. Other accessories	Rs.	150.00
8. Paint	Rs.	25.00
9. Labour and transport	Rs.	300.00
Total	Rs.	2975.00

The wind velocity of the coastal area normally ranges from 0-10 km/h. During the northeast and southwest monsoon periods it may exceed 60 km/h. But the normal wind speed is sufficient to attain a R. P. M. of 300-600 which is sufficient to produce electricity.