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DESIGN AND EVALUATION
OF LOCALLY-FABRICATED WATER-PUMPING
WINDMILL FOR SMALL-SCALE IRRIGATION

A Thesis
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ABSTRACT

A water-pumping system powered by wind energy was designed for use in minor irrigations. It is a mechanical, multi-bladed windmill using a submersible piston pump which pumps an average of 3.2 gpm at 3.7 mps windspeed, lifting water by 4 meters. This was fabricated and installed using available local materials and skills. Windspeed data covering five years, taken from the local PAGASA station were used to determine the feasibility and viability of the windsite selected.

Tests were conducted to evaluate the performance characteristics of the installed windpump and to measure maximum wind potential in the area. All aspects of the windpump performance were observed and evaluated to ensure that the design criteria requirements were met and that the system performs well by generating maximum water discharge at maximum windspeed.

Comparative cost study between a windpump and a diesel pump-set gave the result wherein the operating cost of the diesel pump-set was found to be significantly higher than that of the windpump.



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Results of the evaluation and tests show that full utilization of windpower for water-pumping in the area selected and the neighboring towns and villages is technically feasible and economically attractive.

