

HOME MADE WIND-MILL THAT IRRIGATE OUR FARM LANDS

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ABSTRACT

The title of the project is using homemade wind-mill to irrigate farm land. The design of this project to transfer water from large channel to small canals using only wind generated power. The wind-mill has a rotor, which extracted from a fan and modified by replace a longer custom made blades. The rotor is lubricated by 2 bearings attached with a crank. The crank is connected with a metal shaft. With the combination of the crank and the metal connecting rod, it converts rotational motion to linear motion.

The body of the wind-mill is made of wood and mild steel which mounted with a large bearing to support rotation for the whole system. A wooden fin is also attached at the end of the body of the wind-mill. The structure of the wind-mill stand is made of square hollow mild steel bar. The dimension of the square hollow mild steel bar is 2.5cm x 2.5cm (1 x 1 inch). The body and the structure of the wind-mill are welded together by using arc welding.

The pump used in the wind-mill basically is bicycle tier pump. The dimension of this pump is 49cm x 12cm x 23cm approx. This pump inflates about 2000cc with a single stroke. Inside the pump, it contains 2 valve and 2 seals.

To determine the force required for the pump, Newton's law of motion equations and Bernoulli's Equation of fluid pressure are used to calculate them. There are few factors need to be considered in the calculation which is the efficiency of the pump due to frictional loss.

There are advantages and disadvantages for the wind-mill. The advantage of the wind-mill is that it utilizes sustainable energy and it is zero emission to the environment that which is environment friendly. Besides that, it is fully automatic operating machine and the maintenance for the wind-mill is low. But the disadvantage of the wind-mill is that it takes a long time in order to pump gallons of water.