



“Barjeel” Wind Turbine Tower. Introduction

To top off my nine years of higher education at Sharjah Men’s College (HCT), earning three degrees (Foundations Civil Engineering, Certificate and Diploma Electronic Engineering, and Higher Diploma Mechanical Engineering), I plan to close this chapter of my life by giving my college one of my best ideas.

I thought about this idea since 2003, in class project, which I thought, was impossible at the time. I wrote the idea as Barjeel wind turbine tower, and I drew how it should look so it could generate electricity, but I had no knowledge to make it happen. The idea stayed at the back of my mind until after 8 years, the time has finally come to bring this project in public. In my opinion, developing this project for my country is the best example of how the education that the country has provided us could be used help our students to give back to help develop the country.

How Barjeel Wind Turbine Tower works

The idea is to use a well known traditional idea, the Barjeel, used to air-condition our villas and small houses, to provide a solution to the future energy need by creating an electricity source for a percentage of our country’s electricity need.

Background of the Wind Tower or Barjeel

Called Barjeel in Arabic, a wind tower are the Gulf’s unique form of traditional non-electrical air-conditioner used in old times during the hot summer months and is an ancient architectural element of UAE houses.

Although at present the wind tower is not a need because most people have modern air-conditioning, it is considered as an element of local identity and can be seen in contemporary buildings like villas and government buildings only as a decorative architectural feature.

The Barjeel is a tower rising around five meters above the roof, it is open on all four sides, and The function of this tower is to catch and direct cooler breeze into the room below through vertical shafts and the air is then cooled as it travels down and that prevail at a higher level above the ground and to direct it into the interior of the buildings which providing good air circulation and conditioning.

“Barjeel” Wind Turbine Tower in view

In this project I aimed to have a good renewable way of generating power. During my study at HCT, I learned enough to start designing the wind turbine generator using the Barjeel shape with the out side body design.

I used a good generator from a washing machine motor by reversing the way of using it and have it as generator. Then, I designed the shaft with four lightweight wings in the same old style as it is, and added two bearing’s to make its easy to rotate and the result was good and it rotated smoothly with more than 100 rpm as normal wind movement.



By using the same architectural design, I used the four side entries to keep the air moving from one side to others. Then, I removed the cross wall in the middle and replaced that with a vertical axis rotor. The shape of this rotor was designed specially for this type of wind turbine so with small amount of air, the rotor will start moving to convert this action to generate electricity.

