ANALYSIS OF PLATE IN BALDELESS WINDMILL

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ABSTRACT

We all know that we have a bit of an energy problem. Traditional methods of creating power, like fossil fuels, cause vast amounts of air pollution and habitat destruction; however, there are a number of new energy sources under development. The world now moves towards the renewable energy sources which will be the future for sure. Wind turbines have the power to contribute a significantly to defraying the world's energy budget—but they have some problems of their own, posing certain aesthetic and environmental concerns. New design for bladeless wind turbines could resolve these issues, and ultimately represent a more efficient method of power generation.

I. INTRODUCTION

Energy consumption has drastically increased in recent years due to very rapid development of the economy and human society. Consequently, a lot of greenhouse gases, such as carbon dioxide, are emitted into atmosphere, which consequently contributes to the global warming. Therefore, there arises an issue of improving energy efficiency so as to decrease the energy consumption.

Since it's our topic, a small introduction about the bladeless wind energy. A major energy production in the renewable energy is the wind energy. These wind energy generation's however gives more and more advantages in the generation of electricity overall the world, still it can't able to meet the energy requirement of all the people. Since we already have the wind mills with the blade and not able to produce much of the energy requirements we have decided to move on to the bladeless technologies of energy generation.

A **windmill** is a mill that converts the energy of wind into rotational energy by means of vanes called sailor blades. Centuries ago, windmills usually were used to mill grain (gristmills), pump water (wind pumps), or both. The majority of modern windmills take the form of wind turbines used to generate electricity, or wind pumps used to pump water, either for land drainage or to extract groundwater.

II. EXPLANATION

A conventional type of windmill converts the Kinetic energy of air into the mechanical energy and then to the Electrical energy.

The shaft connected to the hub operate the gear box and then the generator.

Wind power is the use of air flow through wind turbines to mechanically power generators for electric power. Wind power, as an alternative to burning fossil fuels, is plentiful, renewable, widely distributed, clean, produces no greenhouse gas emissions during operation, consumes no water, and uses little land. The net effects on the environment are far less problematic than those of non-renewable power sources.

There's a great need for developing alternative methods of capturing the wind for the engendering of electricity because those giant wind turbines popping up all over the place now are riddled with problems, from noise pollution to space invasion to bird murdering. And to be blunt about it, they're just creepy looking.

The Zero-Blade Technology is largely inspired from the sailboat and is likely to increase the efficiency of the current wind power conversion devices. The blades are replaced by a sail shaped body while both hub and gearbox are removed.

III. METHODOLOGY

The methodology of the project firstly comprises of Drafting of 2-D modelling followed by the Simulation in the ANSYS FLUENT software with the various shapes which is to be verified for the pressure variation of increase and decrease in the pressure drop across the plate which is going to generate the electricity. The simulation have Boundary Conditions.

IV. WORKING PROCESS

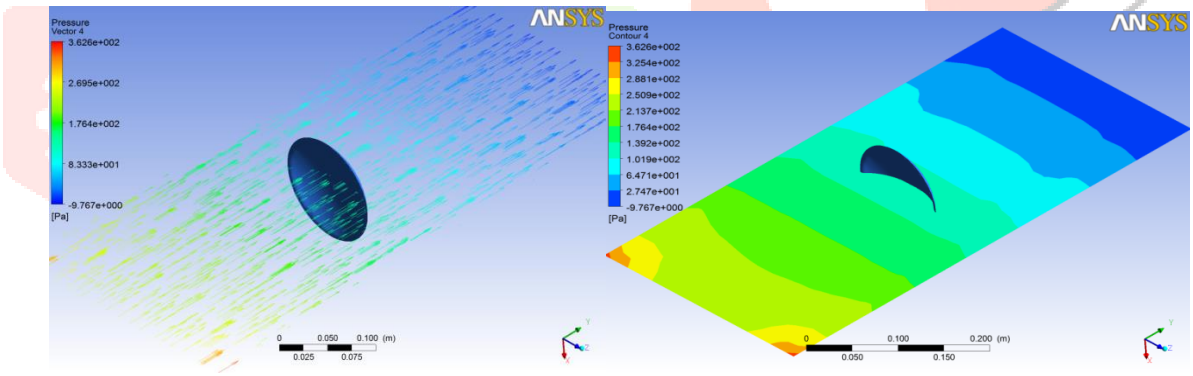
The basic idea was to remove the whole rotating system (blades and hub) and to replace it by a non-rotational sail-shaped body. The idea has evolved over time and emerged as a promising technology named the **Zero-Blade Technology**. The related wind converter, baptized "The Saphonian", is bladeless, rotation less, Noiseless, harmless and most economic.This system captures the wind and it moves into a back and forth motion which can be transformed into mechanical energy through the use of hydraulic pistons. These in turn produces pressure, and a generator instantly convert that pressure into electricity.The electricity can be stored in a hydraulic accumulator for later release and use.

V. DIFFERENT SHAPES ANALYSED

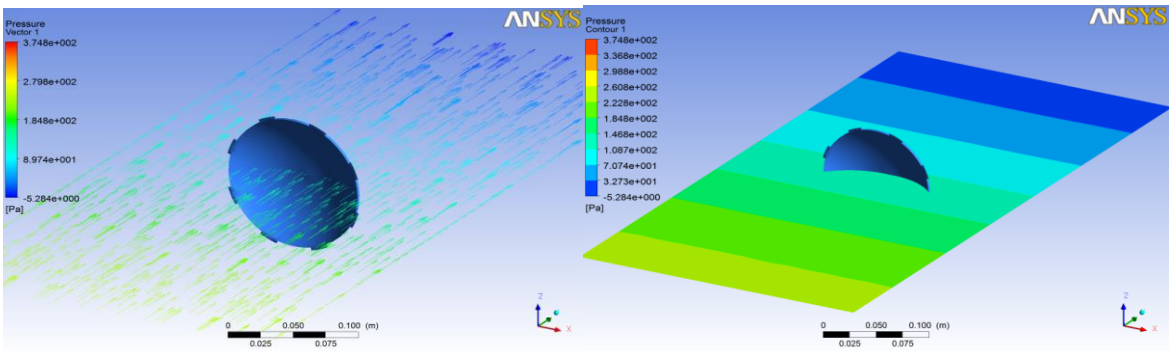
The shapes analyzed are,

- Concave
- Notched
- Convex
- Centre Projection

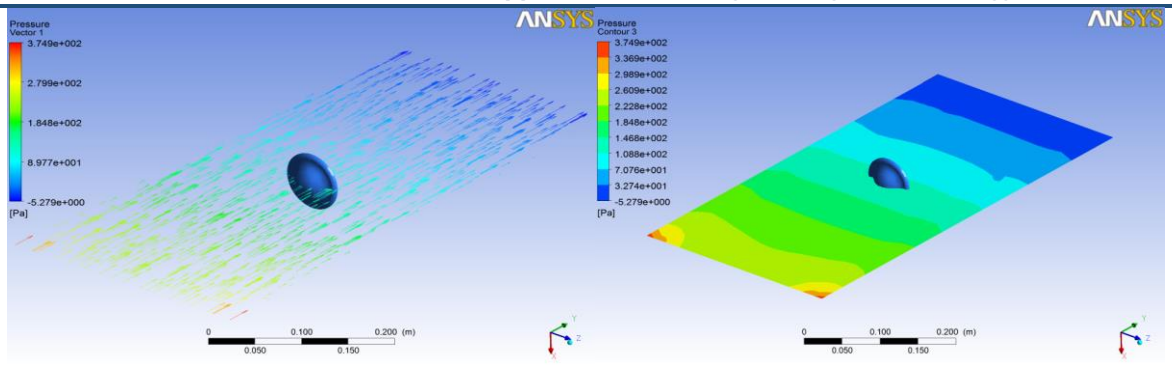
ANALYSIS USING CONCAVE SHAPE



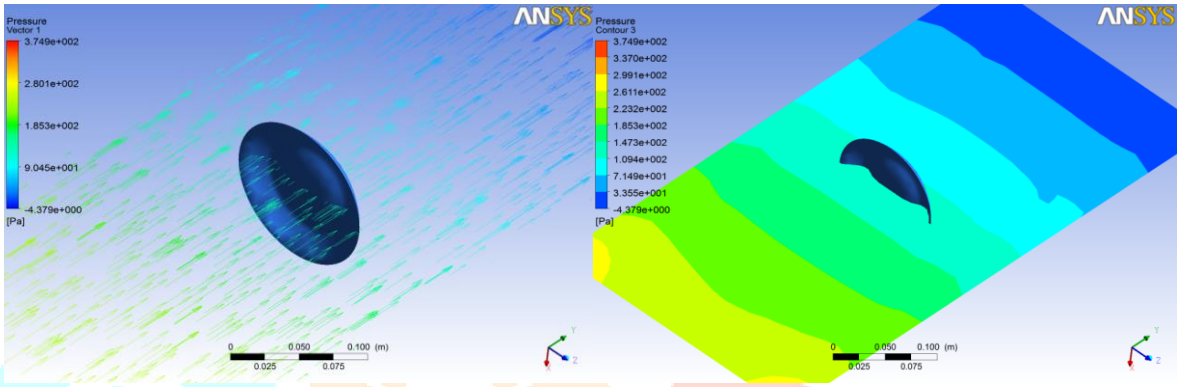
ANALYSIS USING NOTCHED SHAPE



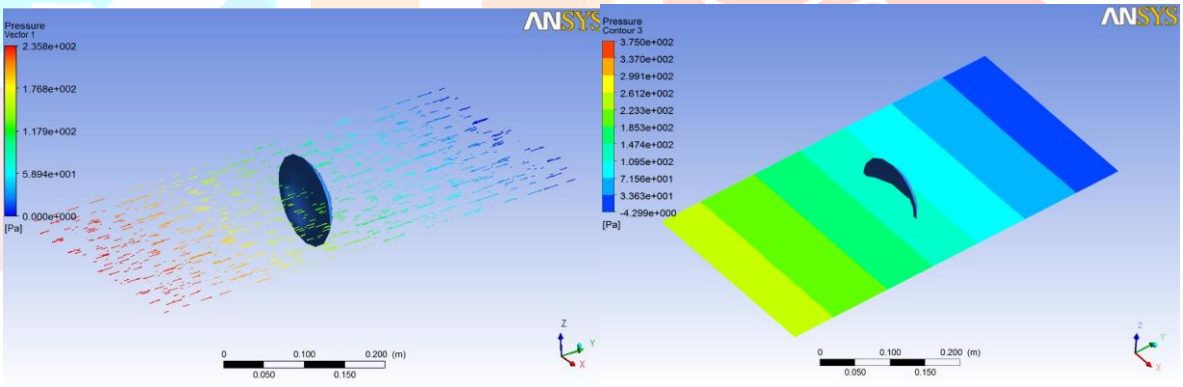
ANALYSIS USING CONVEX SHAPE



ANALYSIS USING CENTER PROJECTION



ANALYSIS USING EXISTING SHAPE



VI. RESULT:

SN. NO	Names of design	Pressure Vector	Pressure Counters
1.	Concave	8.333*10^1	1.019*10^2
2.	Notched	8.974*10^1	1.087*10^2
3.	Without concave	8.977*10^1	1.088*10^2
4.	Centre projection	9.045*10^1	1.094*10^2
5.	Existing	1.179*10^2	1.085*10^2

VII. CONCLUSION

4.	Centre projection	9.045*10^1	1.094*10^2

In conclusion it is recommended that all the blade turbine may be replaced with bladeless turbines to be more productive.

Eco- friendly and less noise. Further it also cost effective when compared with blade turbine it is may not be a surprise to see most of the blade turbines replaced with blade less turbines in the near future give the advantage of blade less turbine.

VIII. REFERENCE

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