

Design Proposal For Using Push Me Pull You Boat For power generation

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Abstract

The author of this paper is proposing a structure design through which push me pull you boat can be used to generate electricity.

Keywords

Push me pull you, Blackford, CFD, Catia, Ansys.

Introduction

Push me pull you boat is a novel invention by B. L. Blackford [1] which moves at twice the velocity of air pushing it perpendicular to its main wings after a certain condition has been met. This paper documents the design and analysis of a structure that is capable of using this invention to generate electricity at possibly higher efficiency than wind turbines used around the world as of today.

Design and analysis

The concept is to keep multiple push me pull you boats attached to an axis tangentially and over water on a circular path. The entire structure then to be covered and a funnel to increase incoming air velocity. In figure 1 below two types of inlet, one elevated and other at ground level. Each have three types of outlets and CFD analysis results have shown 5-15 times increase in velocity, however no clear distinction have been made as shown in figure 2.

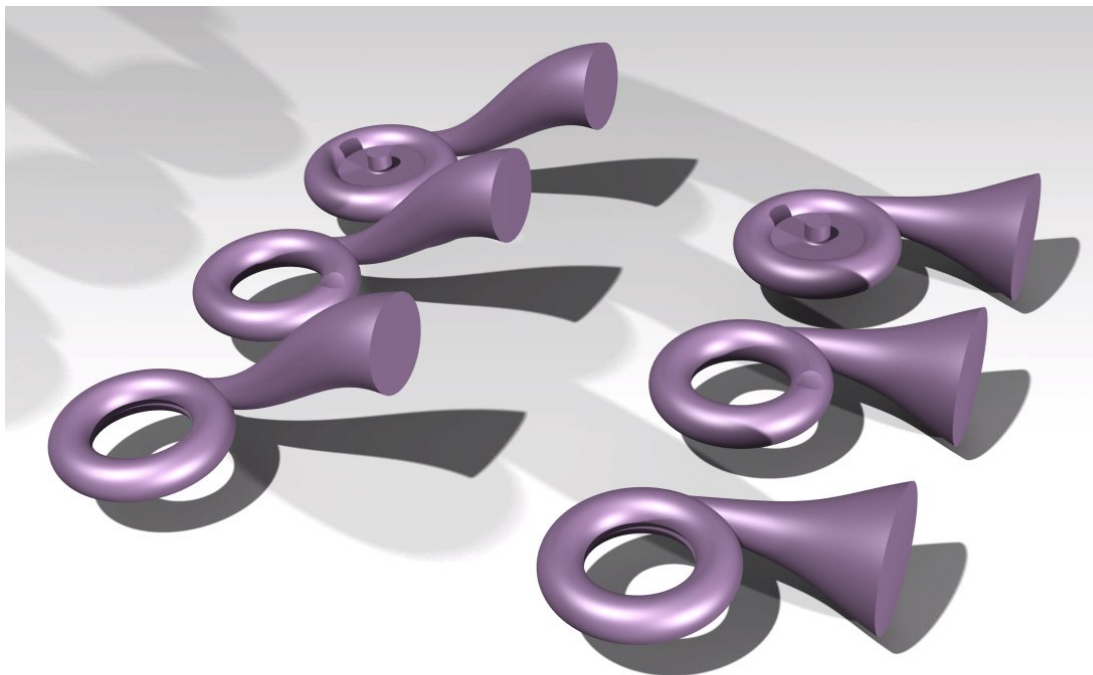


Figure 1

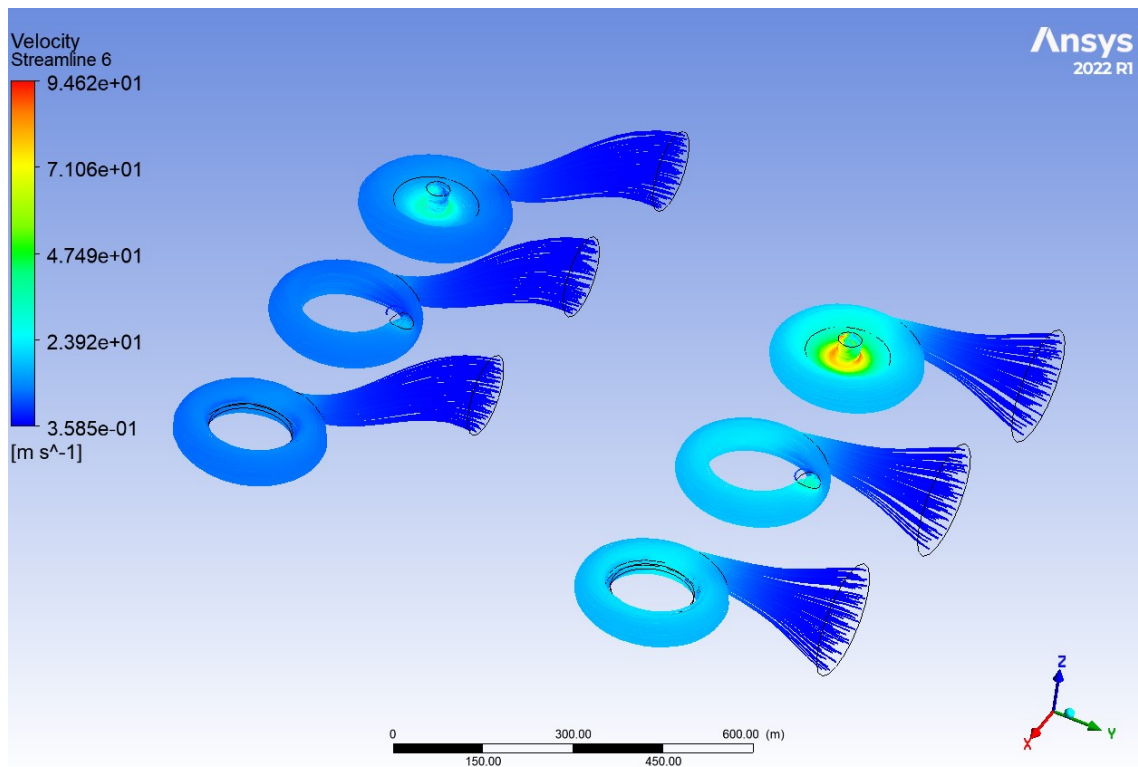


Figure 2

Results of analysing air speed and pressure exerted on walls with respect to inlet speed has been only performed on one type of design. Figure 3 & 4 below show the results of 1m/s inlet velocity as velocity streamline and pressure countour respectively.

Similarly, figure 5 & 6 show results of 5 m/s and in figure 7 & 8 results of 10m/s inlet velocity has been depicted.

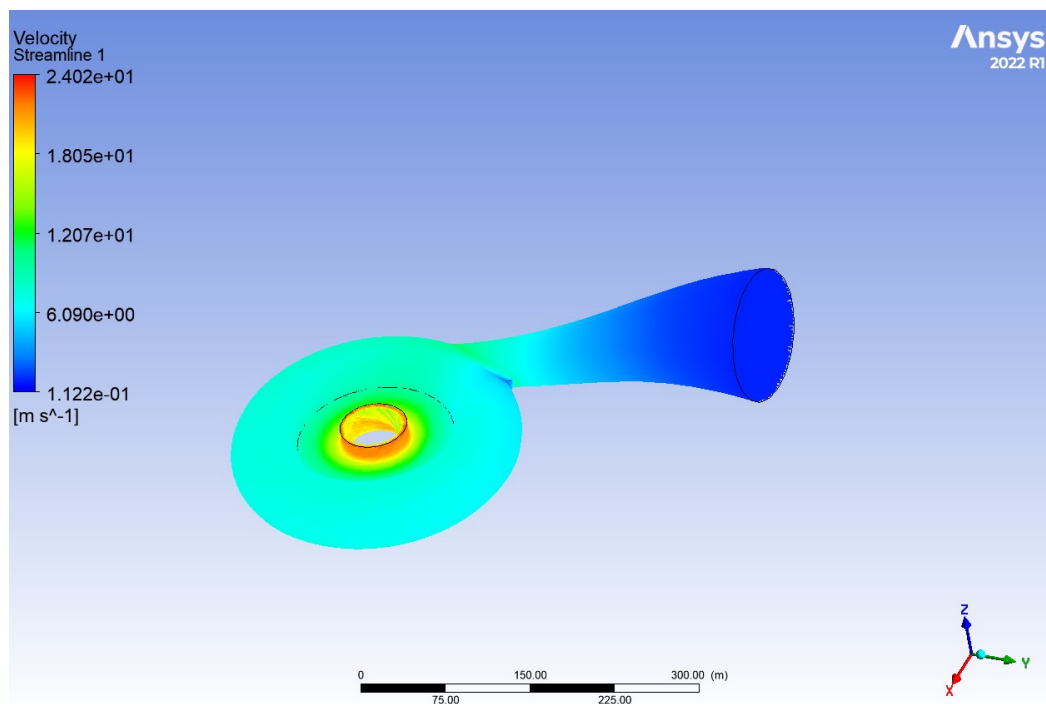


Figure 3 (1 m/s)

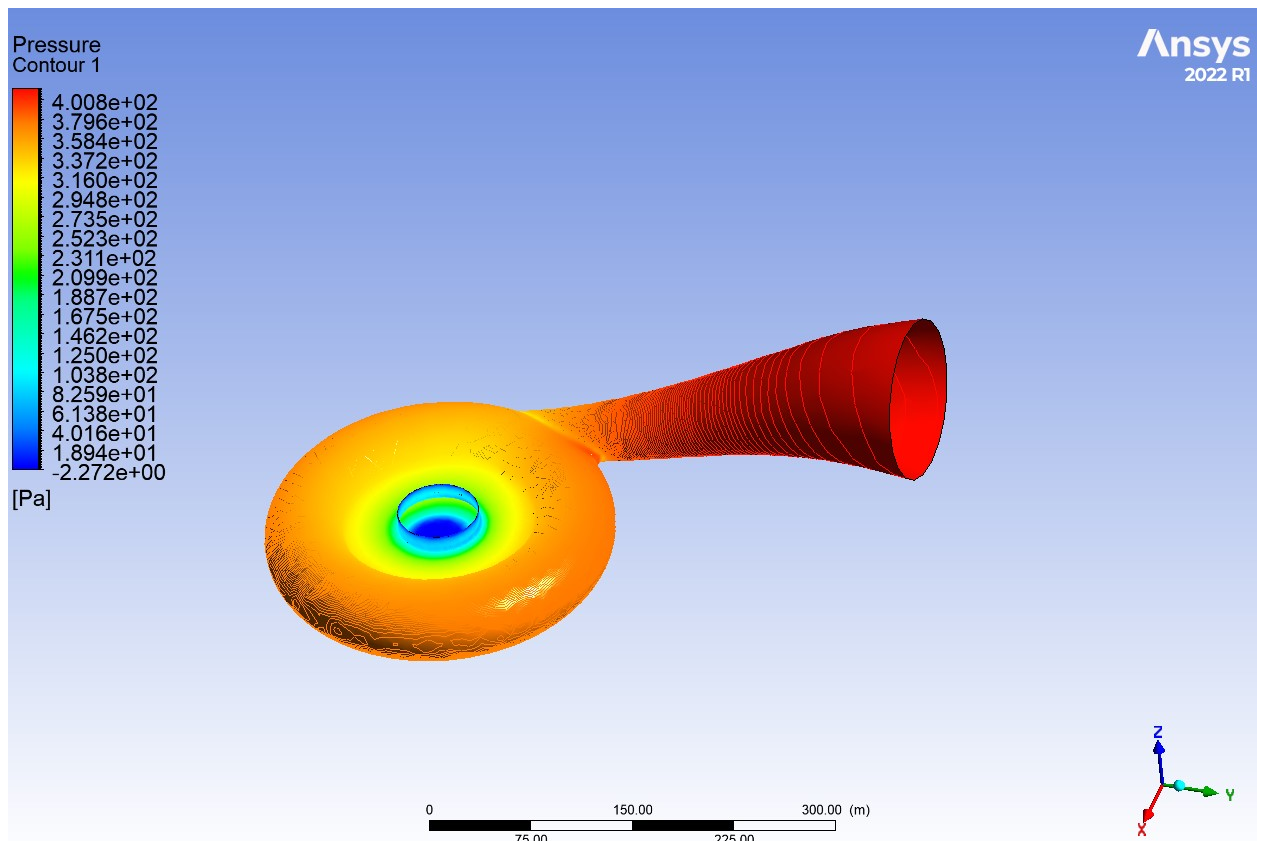


Figure 4 (1 m/s)

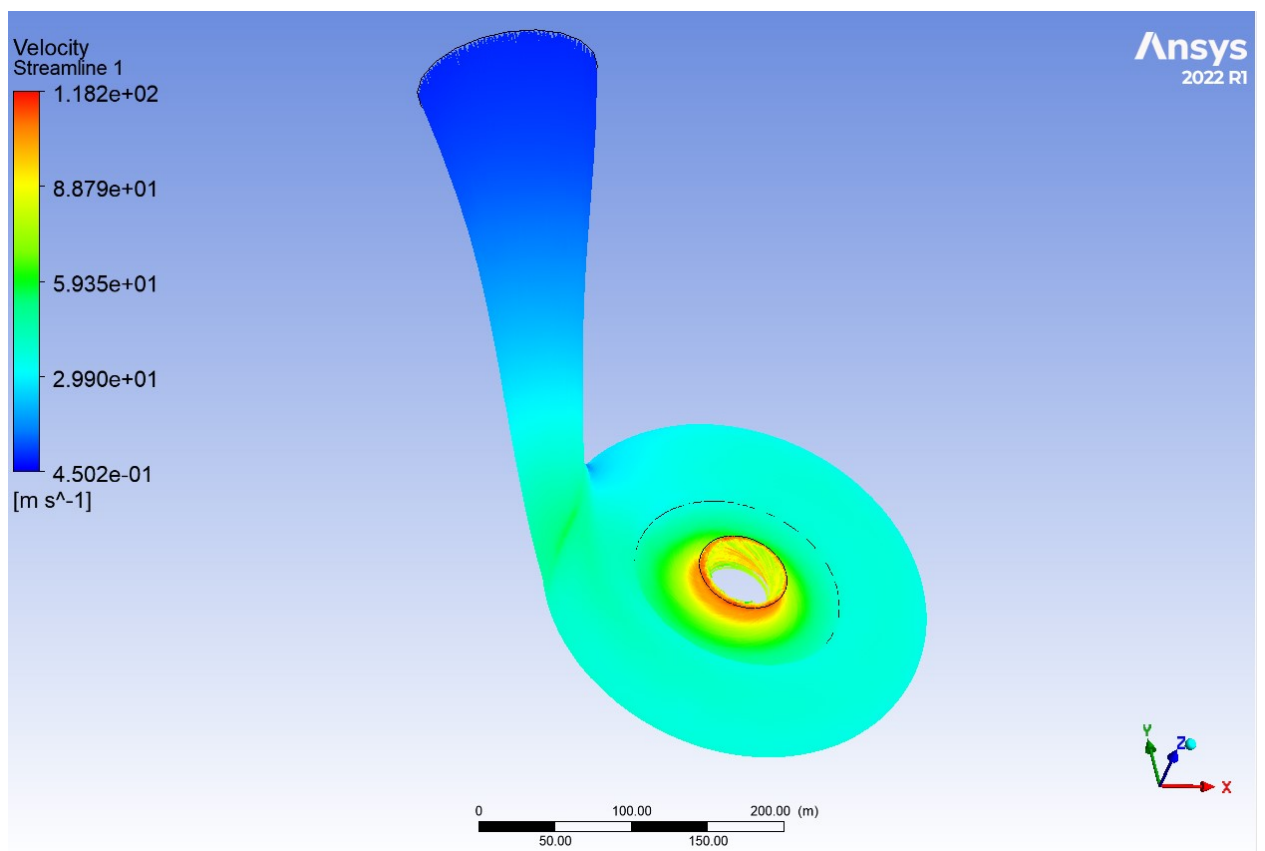


Figure 5 (5 m/s)

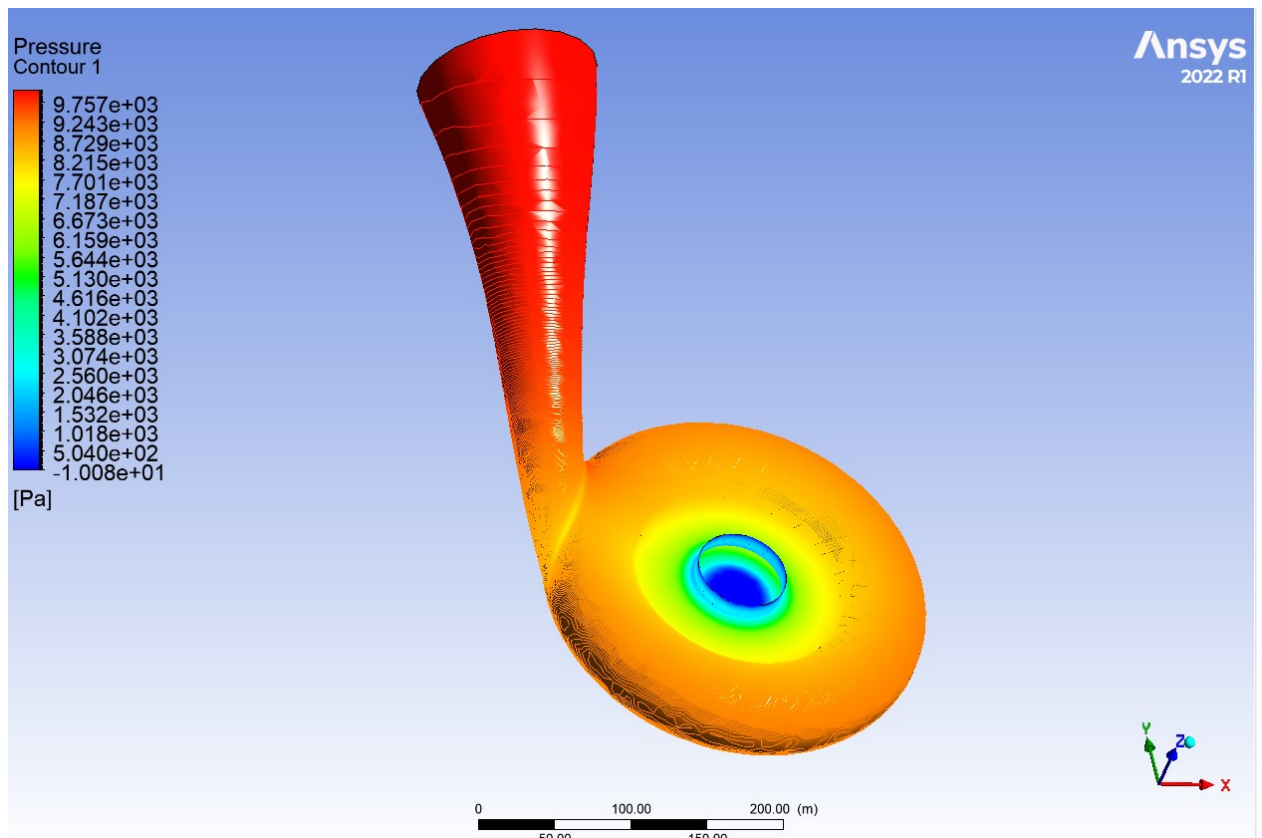


Figure 6 (5 m/s)

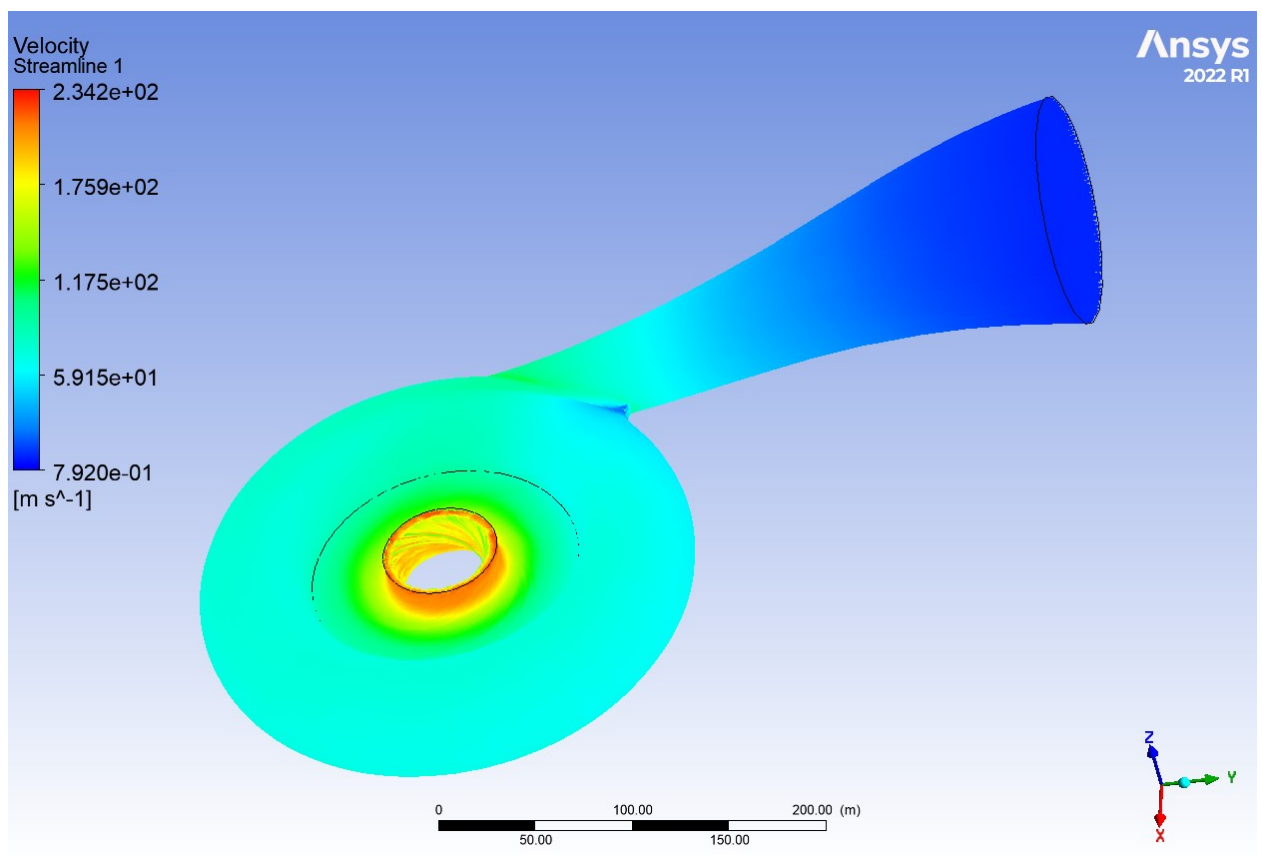


Figure 7 (10 m/s)

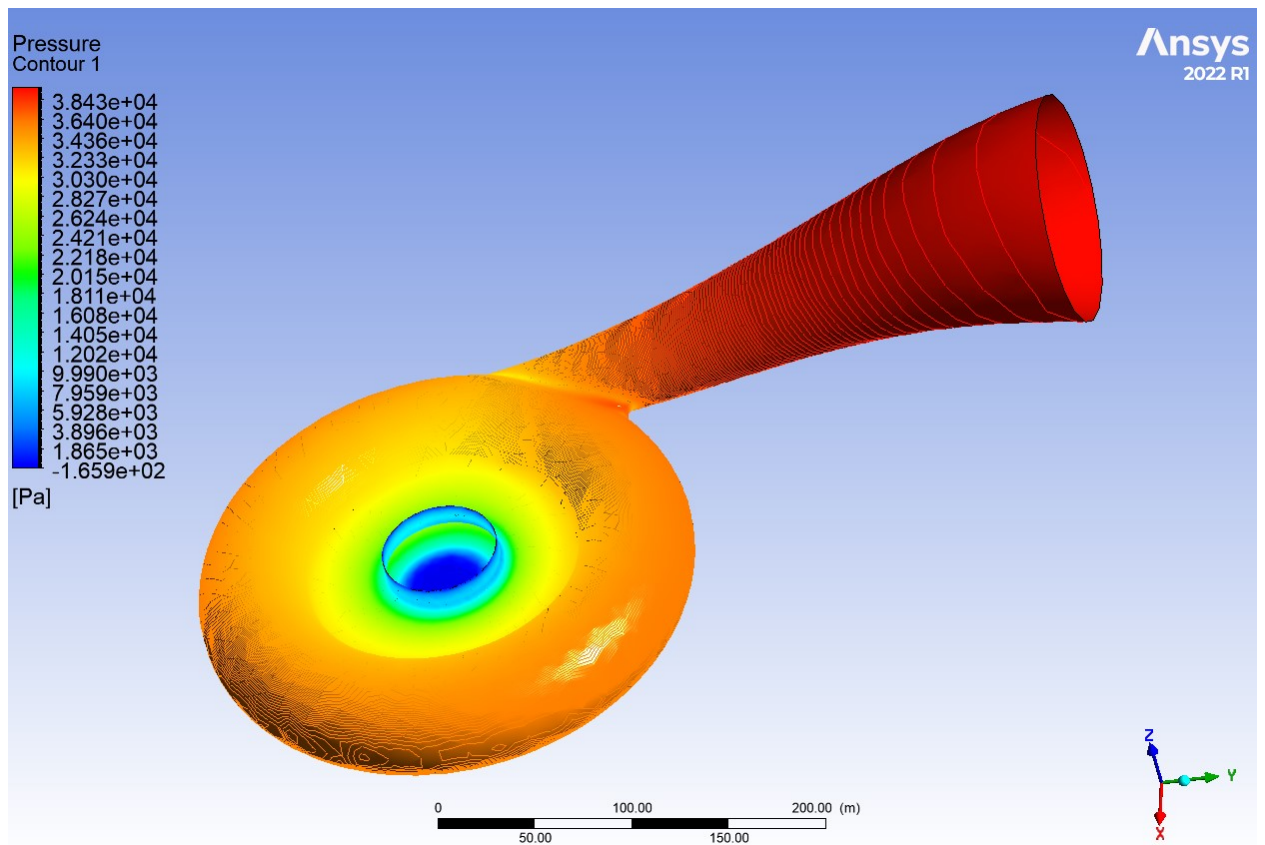


Figure 8 (10m/s)

In figure 9 & 10 , artistic liberty has been taken to illustrate the boats, axis, water, paint (for erosion), concrete base and enclosure.

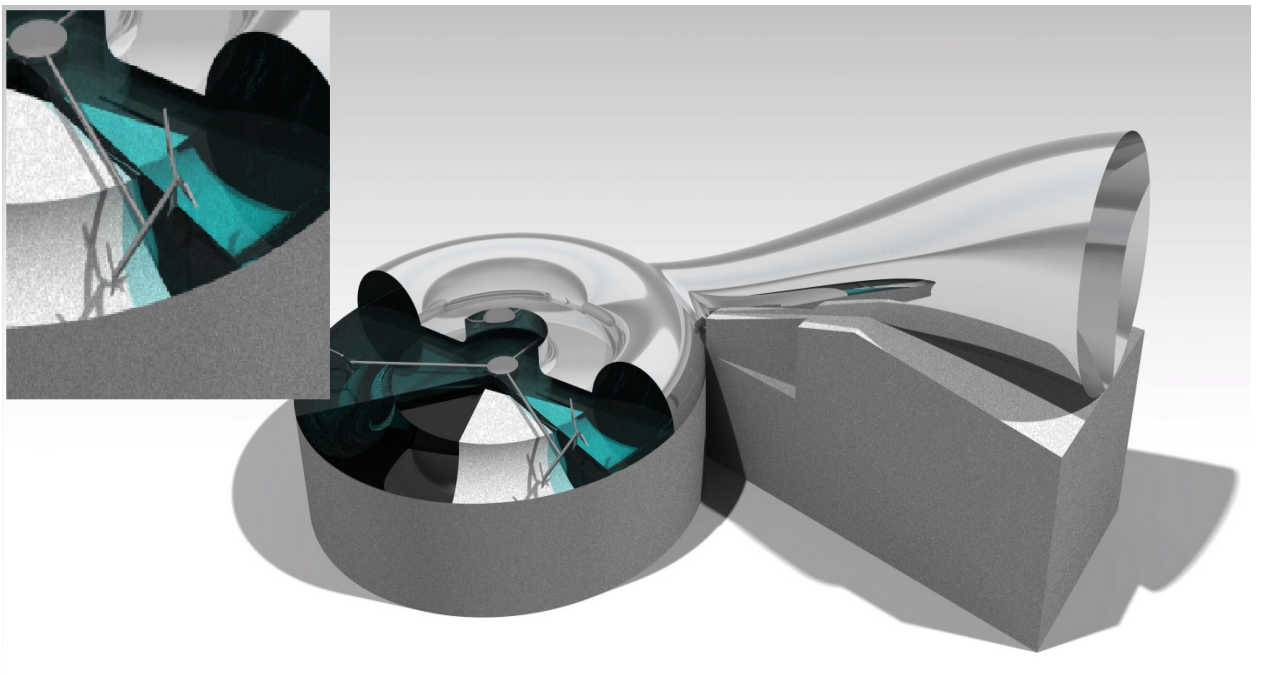


Figure 9

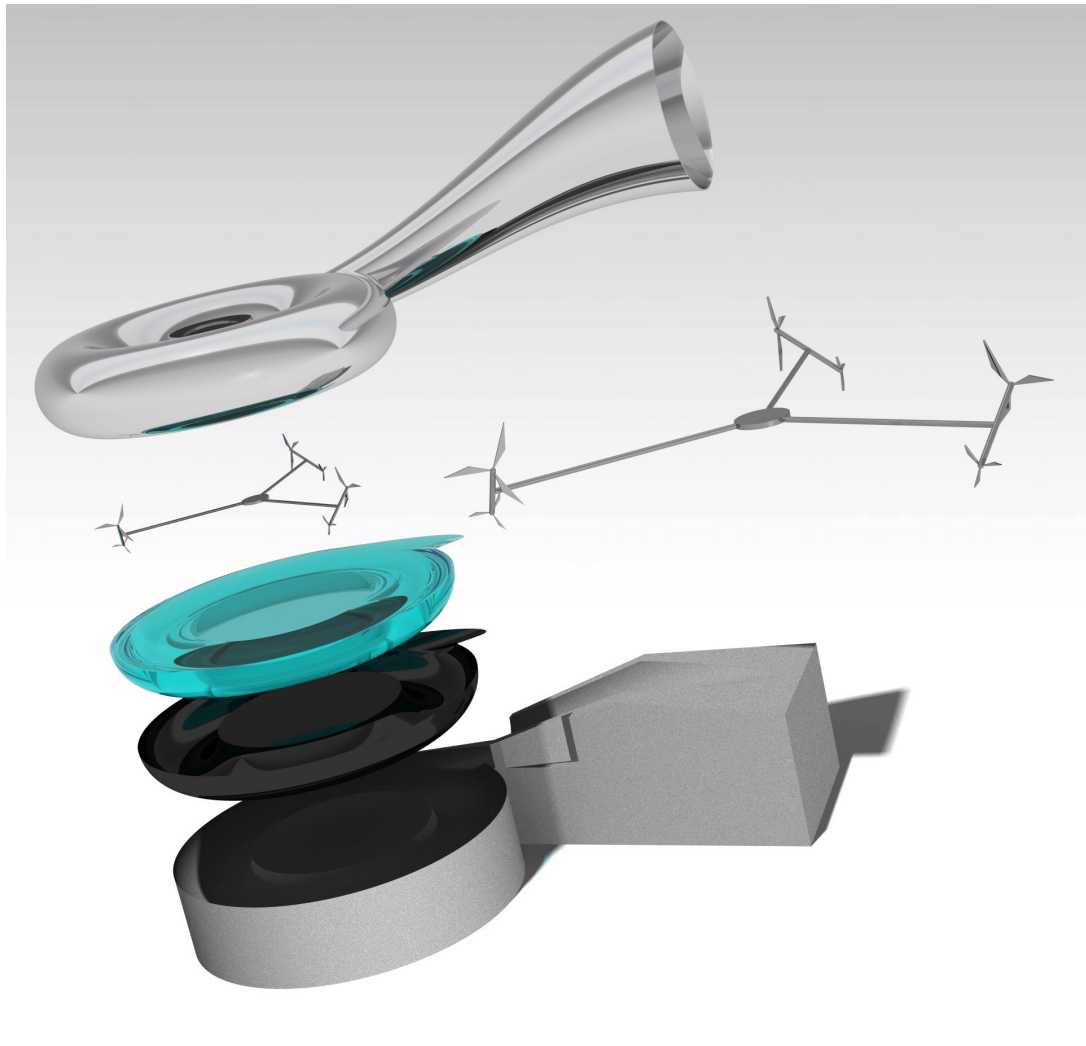


Figure 10

Conclusion

Considering the thrust produced and the angle between tangential boats and wind velocity, the design can be further developed into prototype. While on the other hand pressure counters on walls (for part depicted in figure 3 to 8) have shown 300-400 pa for 1 m/s inlet velocity and 7kpa-10kpa and 30kpa-40kpa for 5 m/s and 10 m/s respectively which has been shown in Table 1.

inlet speed (m/s)	average pressure (pa)	maximum pressure (pa)	wind velocity inside tunnel (m/s)	pressure around tunnel walls (pa)
1	300	400	6	350
5	7000	10000	30	8500
10	30000	40000	60	35000

References

- [1] The physics of a push-me pull-you boat B. L. Blackford Department of Physics, Dalhousie University, Halifax, Canada (Received 20 March 1978; accepted 17 May 1978)
- [2] S. Martin, Sci. Am. 233 (No. 12), 125(1975).