

force. It is observed that for different inlet velocity of air from 15m/sec to 35m/sec we got drag force in the range from 170N to 190N for the taken pentagonal cylinder.

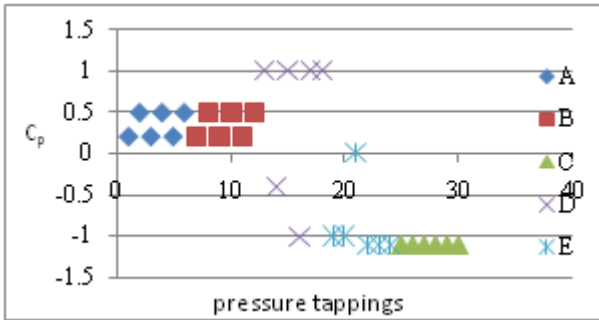


Figure 3: C_p distribution vs pressure tapping numbers for 0 degree angle of attack with inlet velocity of air at 15m/sec or at 57300 Reynolds number

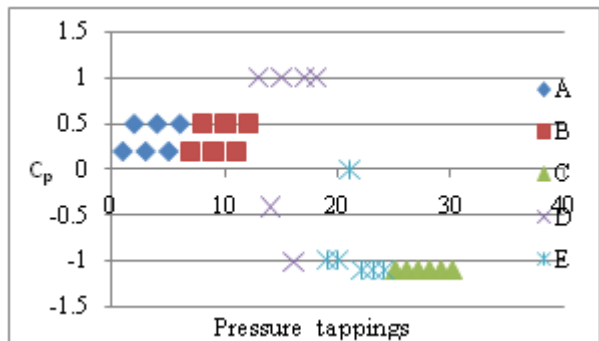


Figure 4: C_p distribution vs pressure tapping numbers for 0 degree angle of attack with inlet velocity of air at 25m/sec or at 95500 Reynolds number

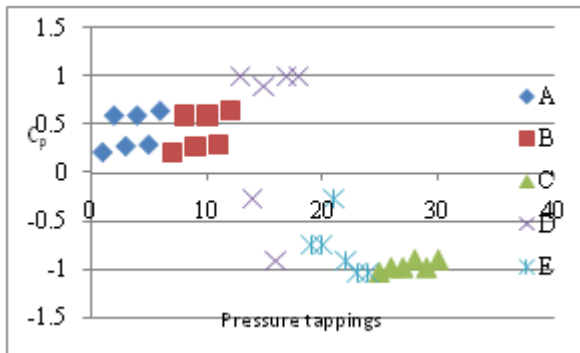


Figure 5: C_p distribution vs pressure tapping numbers for 0 degree angle of attack with inlet velocity of air at 35m/sec or at 133700 Reynolds number

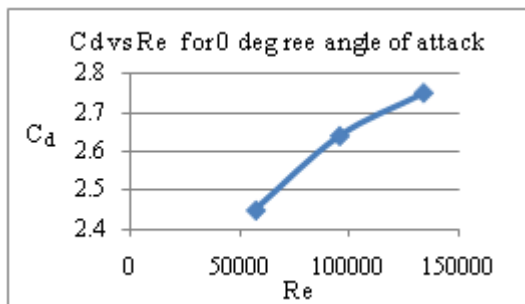


Figure 6: Drag coefficient vs Reynolds number for 0 degree angle of attack.

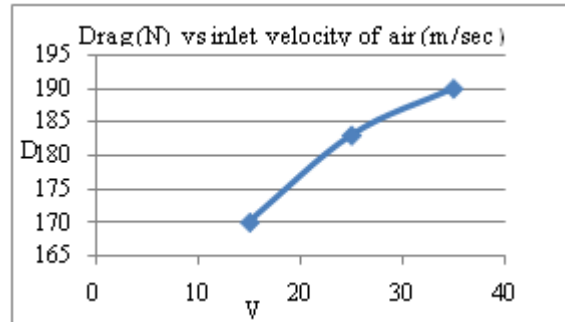


Figure 7: Drag force vs inlet velocity of air for 0 degree angle of attack

9. Conclusions

In statistics theory it was given that, regression was a mathematical measure showing the average relationship between two or more variables in terms of the original units of the data. Regression line describes the average relationship between x and y variables i.e.) it is a line which displays the mean value of y for the given values of x. Using minitab software regression line between drag coefficient and Reynolds number for this present condition it was found out to be $y = 2.284 + 0.000003x$ for the curve shown in fig.6. Similarly regression line between drag force and inlet velocity of air for this present condition it was found out to be $y = 156 + x$ for the curve shown in fig.7.

References

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