Experiment 3 - Flow Around a Cylinder

Questions

Present all of your data in a dimensionless form, i.e., use c and U_∞ as non-dimensionalizing parameters. Also, indicate the Reynolds number of the flow when presenting the values for C_D.

1. Plot the non-dimensional vertical distance versus the non-dimensional velocity at the locations $x/c = -1$, 1 and 1.5. Use c and U_∞ as the non-dimensionalizing parameters. Discuss the properties of the wake profiles obtained at the two downstream locations. For example: does the wake size increase or decrease downstream / what does this represent or signify / etc. What happens to the maximum velocity at the two downstream stations?

2. Calculate C_D from the wake profiles at both locations.

3. Does the pitot-static tube indicate a steady pressure differential inside of the wake? How about outside the wake? Can pitot-static tubes accurately measure turbulent fluctuations? Why or why not? Explain.