

Siemens Gamesa Renewable Energy

Department: Offshore Blade Design

Manager: Alonso Zamora

Engineering & Programming Challenge

Problem description

- Write a program to automatically run a polar with XFOIL
- Your program should be able to gather the results automatically
- Your program should also be able to create plots for:
 - Aerodynamic polar coefficients (c_l vs. AoA, c_d vs. AoA, c_m vs. AOA, and c_l/c_d vs. AOA)
 - Pressure coefficient distributions at 0 deg, 4 deg, 8 deg, and 12 deg
 - Boundary layer properties at the trailing edge (displacement thickness, momentum thickness, and shape factor) vs. AoA

Use your program to analyze the aerodynamic performance of a NACA63(3)-618 airfoil at 3 million, 10 million, and 15 million Reynolds number. Use angles of attack from -10 deg to 20 deg.

Deliverable

Submit your code along with a written report with your plots and your own evaluation of the results.

It is preferred if you submit your code via a GitHub repository, but this is not mandatory. The report can be added to that repository as well, if convenient.

Otherwise, please email the code and results to Alonso Zamora. Request confirmation of receipt.