Research Practicum

Simulating wind around the Flatiron building using RANS CFD simulations

Author:
Ruben Biesheuvel
Marinus Geuze

Supervisor:
Dr. S. Kenjeres

TU Delft
Faculty of Applied Sciences

September 27, 2014

Abstract

Contents

1 Introduction

In 1902, the iconic building at Madison square was opened. Folklore has it that there were groups of men standing and watching around the building, waiting for a gust of wind to come and create such an updraft that women's skirts to blow upwards. It will be our quest to simulate this updraft, and find out where we have to stand to see up the women's skirts.

2 Theory

2.1 Navier Stokes

2.2 Reynolds Averaged Navier Stokes

2.2.1 Turbulence

2.2.2 k-ϵ model

3 Method

How we built the building and the mesh.

4 Results

5 Conclusion and Discussion

5.1 Grid convergence

5.2 Uncertainty

A Error Analysis