MSc-Project (30ECTS):

Optimisation of the wind load on a high-rise building by shape modifications

The project focuses on optimising the wind load on a genetic high-rise building, by introducing small modifications of the shape. The task is to optimise the wind loads and evaluate the static equivalent loads on the high-rise buildings.

Keywords: wind load; high-rise building; structural dynamics in frequency and time domain; statistics

High-rise buildings are affected of strong wind loads. Therefore structural engineers are seeking a way of reducing and optimising the wind load. The shape of a high-rise building is the most important factor of the wind load, and by changing the shape with small modifications, the wind load will decrease.

The project consists of investigating the wind load on a genetic high-rise building and compared the results to the wind loads of the four genetic building shapes with modifications.

The project shall evaluate the advantages and disadvantages of the different modified shapes, by determine the static equivalent loads of the high-rise buildings. These loads shall be determine by a modal analysis in the frequency- or time domain.
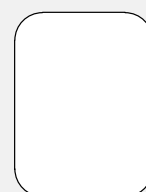
The project will be a part of an Industrial PhD project, where the results of the master project will be used in the PhD project for investigation of CFD simulations.
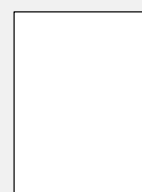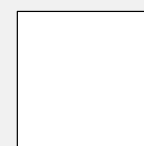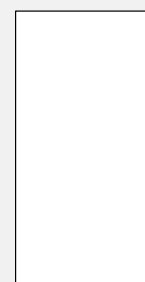

Genetic building 3:4
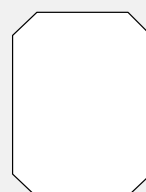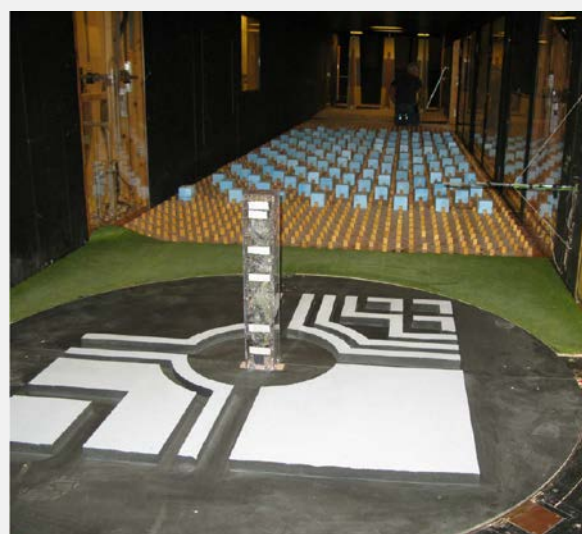
truncated corners   rounded corners   square   rectangular 1:2

Shape of the genetic building with width/depth ratio of 3:4, where the four shapes underneath is for investigating the difference of the static equivalent loads.

Wind loads measured in a wind tunnel experiment will be used as input data to study the wind load on the high-rise buildings.

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