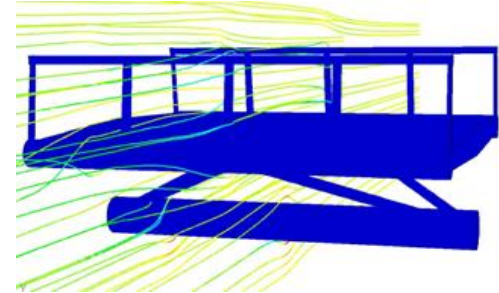
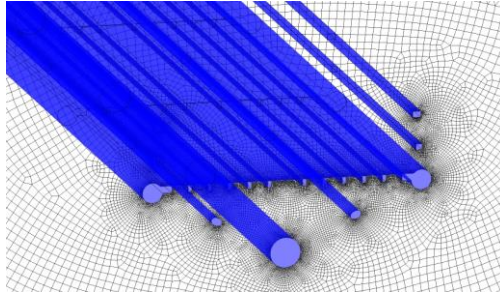
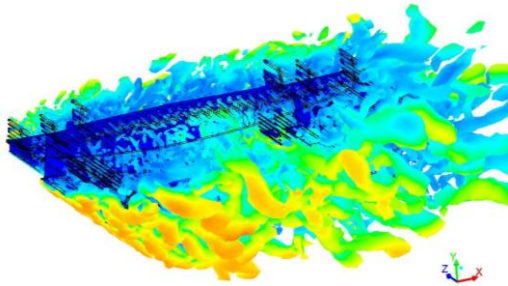
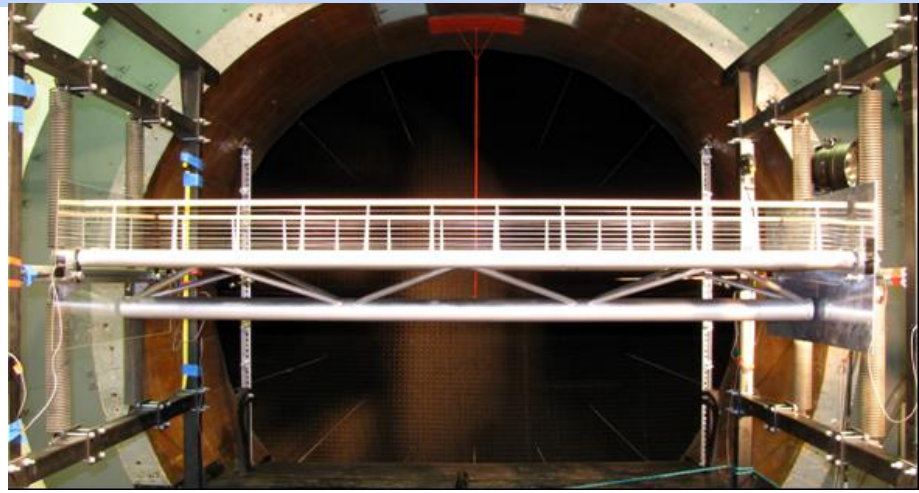
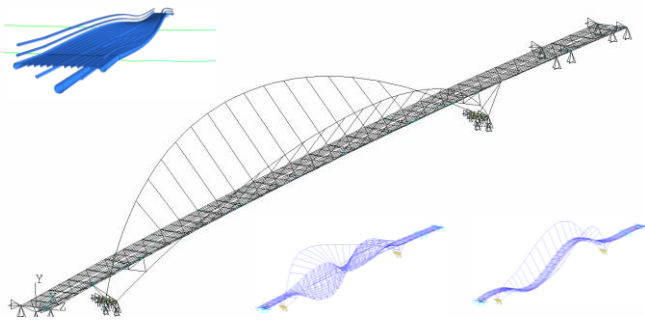


FLUID DYNAMICS

Aerodynamic performance of bridge decks and other civil engineering structural elements are determined by using either CFD simulations or wind tunnel tests. The static and dynamic force coefficients as well as the Strouhal-number are determined by using LES or pressure measurements. The flutter derivatives are extracted via free- or forced oscillation methods.



STRUCTURAL DYNAMICS



The investigated structure is modelled by using FEM approach. The structural response due to external loading (e.g. artificial turbulent wind function) or the critical flutter speed is calculated in frequency or time domain based on multi-modal analysis. In case of cable structures, geometrically non-linear dynamic simulation is performed.

FLUID-STRUCTURE INTERACTION SIMULATIONS

We experience remarkable span length increase and the spreading of extraordinary structures, which requires special treatment of the fluid-structure interaction. Our three-dimensional FSI method was validated on an idealized aero-elastic wind tunnel model. The approach proved to be accurate; therefore was successfully applied to the Tacoma Narrows Bridge.



OUR TEAM AND EXPERTISE

Our team comprises CFD engineers, wind tunnel testing experts and a bridge design engineer as well in order to cope with any wind related structural problems. ANSYS products are used for the aerodynamics (ANSYS-FLUENT) and the structural dynamics (ANSYS Mechanical Classic). Our wind engineering references includes road bridges (e.g. cable stayed), and pedestrian bridges (e.g. steel arch structure with a main span of 120m).