Northeastern

Department of Civil and Environmental Engineering
Distinguished Seminar Series

Wind-Induced Vibrations of Structures

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Monday, November 30th, 2015
12pm-1pm
458 Richards Hall

Abstract

The seminar will focus on wind-induced vibrations of different types of structures based on 40 years of experience in wind engineering. Wind-induced vibrations govern the design of many long span structures, such as cable-supported bridges, high-rise buildings, chimneys, masts and offshore structures. Design approaches based on the application of theoretical calculations combined with wind tunnel testing will be discussed.

The wind-induced vibrations include buffeting vibrations induced by turbulence of the incoming, undisturbed wind, flutter-induced vibrations of bridge decks, and galloping-induced and vortex-induced vibrations of different types of cross sections. Recent studies of long-span suspension bridges with spans of up to more than 2 km will be discussed.

At early stages of a design process, the susceptibility of wind-induced vibrations is often evaluated using estimates of the Scruton number. The application and advantage of a more general mass-damping parameter to be used in practical design will be suggested.

Videos will be used to illustrate wind-induced vibrations.

Bio

Svend Ole Hansen is the director of Svend Ole Hansen ApS, Copenhagen, Denmark and the CEO of SOH Wind Engineering LLC, Burlington, Vermont, USA. Both companies carry out consultancy with special field of wind engineering and structural vibrations. They have three boundary layer wind tunnels, one was constructed in Copenhagen in 1991 and two very large tunnels were completed in Burlington in 2012.

Svend Ole Hansen became M.Sc. in Civil and Structural Engineering in 1975 and got his Ph.D. in Wind Engineering at the Technical University of Denmark in 1978. He has since his graduation as civil engineer specialized in wind engineering, structural vibrations and structural safety of various onshore and offshore structures. He has been engaged in a wide range of different projects related to these topics.

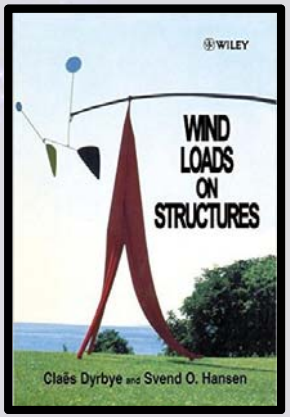
Svend Ole Hansen has been consultant on many buildings and cable-supported bridge projects. One of the more noteworthy bridge projects has been the George Washington Bridge between Manhattan and New Jersey in New York, USA.

Svend Ole Hansen has been a lecturer in wind engineering at the Technical University of Denmark for more than 10 years. He has been an invited speaker on many occasions, e.g. at the 6th European and African Conference on Wind Engineering EACWE 2013 in Cambridge, for the Scruton Lecture in 2009 and at the Structural Engineers World Congress in 2007 in India. He was appointed as a professor at Syddansk University in 2013.

Svend Ole Hansen has written three books and a number of papers regarding different aspects of wind engineering. He has made substantial contributions to the Eurocode on wind actions.

Svend Ole Hansen, PhD

Director, Svend Ole Hansen ApS, Denmark
CEO, SOH Wind Engineering, Burlington, VT



Education

- **PhD, Wind Engineering, *TECHNICAL UNIVERSITY OF DENMARK***
- **MS, Civil & Structural Engineering, *TECHNICAL UNIVERSITY OF DENMARK***

Research Interests

- **Wind engineering**
- **Structural dynamics**
- **Fluid dynamics**
- **Structural safety**
- **Extreme wind & wind tunnel measurements**

Selected Honors and Projects

- **Constructed three boundary layer wind tunnels.**
- **Consultant, George Washington Bridge (NY-NJ)**
- **Lecturer, Technical University of Denmark**
- **Professor, Syddansk University, Denmark2013**
- **Author of 3 books.**