

Curriculum Vitae

Name	Ole Hededal
Specialisation	Soil and rock mechanics Geotechnical engineering Urban underground engineering Wind turbine foundations Computational mechanics
Nationality	Danish
Year of Birth	1967
Civil Status	Married
Children under 18	2
Education	M.Sc. in Structural Engineering from Aalborg University, 1991. Ph.D. in Computational Mechanics from Aalborg University, 1994.

Employment record

Period	Employer	Position
2004-date	DTU Byg, Section of Geotechnical Engineering, Technical University of Denmark	Head of Section , Associate Professor, Research Leader Soil Mechanics and Geotechnical Engineering
2005-date	Rambøll, Dept. Ports and Tunnels	Ad hoc specialist advisor
2005-date	COWI, Dept. Marine Structures and Geotechnical Engineering	Ad hoc specialist advisor
2003-2004	Det Norske Veritas, Danmark	Head of Section Technology Services Denmark Structural verification of offshore structures and offshore wind turbine foundations.
2002	Det Norske Veritas, Danmark	Engineer Offshore technology Structural verification of offshore structures and offshore wind turbine foundations.
2001-2001	COWI, Consulting Engineers and	Senior specialist

	Planners AS, Copenhagen, Denmark	FEM & Soil-Structure Interaction
1999-2000	Technical University of Denmark Dept. of Structural Mechanics and Materials	Post Doc. Researcher
1997-2000	COWI, Consulting Engineers and Planners AS, Copenhagen, Denmark	Head of the Geotechnical Analysis Group. Analyses of soil-structure in- teraction.
1996	COWI, Consulting Engineers and Planners AS, Copenhagen, Denmark	Project Engineer. Numerical analyses using FEM.
1994 – 1995	Aalborg University	Assistant Professor in Computational Mechanics. Research and Education.
1993	Chalmers Technical University, Göteborg, Sweden	Research assistant at Department of Building Technology
1991 – 1994	Aalborg University	Ph.D. student. Structuring of Finite Elements.

Academic assignments

DTU

Supervisor of PhD projects:

Cyclic Laterally Response of Wind Turbine Monopile Foundation in Saturated Sand, (2009-2012)

Numerical and physical modelling of laterally loaded of pile in sand subject to cyclic loading (2005-2009)

Temperature influence on rock mechanical properties (2004-2011)

Deformation caused by installation and loading of large diameter piles in rate sensitive saturated clays (2006-2009)

Applicability of multiple footing substructures using caisson for future offshore wind turbines (2005-2008)

Supervisor of MSc projects (selected projects)

Load Amplitude effects on Cyclically loaded Monopile (2011)

Modelling of segmental tunnel linings with considerations of joint and ring interaction (2011)

Interaction Models for Train Induced Vibrations in Bored Tunnels (2011)

Copenhagen Metro Cityring - The Kongens Nytorv Tunnelling Intersection (2011)

3D modellering af Offshore monopæle i ler (2010)

Time Dependent Pressure Distribution on Immersed Tunnel Element - a Numerical and Analytical Investigation (2010)

Laterally loaded pile in sand – centrifuge and numerical modelling, (2009)

Effect of Using Approaches for Determining Design Overlay Thicknesses in Mechanistic Analysis of Flexible Pavements (2009)

Modelling of Rock Salt Creep (2009)

Limestone Classification in the Copenhagen region by geophysical borehole logging. (2007)

Strength properties of soft clay at Thyborøn Harbour (2007)

Statically and cyclically loaded mono-pile in soft clay (2006)

Geotechnical analysis of ballasted gravity foundation for offshore wind turbines (2005)

Cyclic loading on sand (2004)

NATM-Tunneling – determination of strength and deformation parameters for Copenhagen Limestone using numerical back analysis (2004)

Courses (in present position)

Geotechnical engineering – basic course (BSc/BEng) (5 ECTS credits)

Advanced soil mechanics (MSc) (5 ECTS credits)

Advanced geotechnical engineering (MSc) (5 ECTS credits)

Numerical methods in soil mechanics (MSc) (5 ECTS credits)

Advanced rock mechanics (part of) (MSc) (5 ECTS credits)

Mechanical Modelling of Materials in Civil Engineering (part of) (PhD level) in co-operation with Professor Rodrigue Desmorat LMS-ENS Cachan and Professor Henrik Stang, BYG•DTU (5 ECTS credits)

Other academic assignments

Official opponent to Ph.D. defense at NTNU Trondheim: Gustav Grimstad, Norway, 2009 .

Official opponent to Ph.D. defense at Aalborg University: Morten Liingard: *Dynamic Behaviour of Suction Caissons*, Denmark, 2006.

Official opponent to Ph.D. defense at Aalborg University: Kim Parsberg Jakobsen: *Elements of Constitutive Modelling and Numerical Analysis of Frictional Soils*, Denmark, 2002.

Member of the corps of External Examiners appointed by the Ministry of Education, 2004-date.

Member of Research Advisory Board (FRP) in relation to under KFT Coordination Forum for Adaption to Climatic Changes (KFT), 2008-date

Invited lecturer ENS-Cachan, Paris. Short Course on Critical state soil mechanics – part of Master Programme, 2007

ISSMGE – member of TC104 on Physical modelling in geotechnics, 2009-date

ERTC, member of ERTC7 (European Regional Technical Committee ERTC7 - Numerical Methods in Geotechnical Engineering), 2008-date

Femernbælt A/S: Member of Geotechnical Expert Advisory Group, 2008-date

Grants

Danish Research Board (STVF): Numerical and physical modelling of laterally loaded of pile in sand subject to cyclic loading (2005-2008), **1.8 MDKK**

EFP 2007: Physical and numerical modelling of monopiles for offshore wind turbines, **0.28 MDKK** (joint project Aalborg University a.o., total grant 2.3 MDKK)

GTS-University collaboration contract: Marine Structures of the Future, Joint research grant with DHI, DTU Mek and DTU Byg: (2010-2012): **1.8 MDKK**

DSF: COOEE - CO2 emission reduction by exploitation of rolling resistance modelling of pavements. Joint research project with Danish Road Directorate, Roskilde University, NCC Roads and Dynatest Ltd: **3.45 MDKK**

International collaboration

LMT-ENS Cachan, Rodrigue Desmorat, 1 month visiting researcher, 2007-2008

ETH Zürich, Prof. Sarah Springman acting as co-supervisor to PhD student

- List of Publications**
- R. Klinkvort and O. Hededal (2010): Centrifuge modeling of offshore monopile foundation, Proc. ISFOG 2010, Perth, November 2010.
- R. Klinkvort, C.T. Leth and O. Hededal (2010): Centrifuge modeling of a laterally cyclic loaded pile, Proc. ICPMG2010, Zürich, June 2010.
- O. Hededal and R. Klinkvort (2010): A new elasto-plastic spring element for cyclic loading of piles using the p-y-curve concept, Proc. NUMGE 2010, Trondheim, June 2010.
- N. Katic and O. Hededal (2010): On the local instabilities in simulations of installation processes in geotechnics. Proc. ECCM 2010, Paris.
- C. Leblanc, O. Hededal and L.B. Ibsen (2009): A modified critical state plasticity model for sand - theory and implementation, submitted for publication in International Journal for Numerical and Analytical Methods in Geomechanics.
- N. Katic and O. Hededal (2008): Strong discontinuity with cam clay under large deformations, I. Theory and implementation. Proc. 21nd Nordic Seminar on Computational Mechanics, ed. Kvamsdal et al., Trondheim 2008.
- N. Katic and O. Hededal (2008) : Strong discontinuity within a Critical State domain, Proc. 8th World Congress on Computational Mechanics, ed. Shrefler and Peregu, Venice 2008.
- C.T. Leth, A. Krogsbøll and O. Hededal (2008): Centrifuge facilities at Technical University of Denmark, Proc. NGM 2008, Norway, 2008.
- O. Hededal and T. Strandgaard (2008): A 3D elasto-plastic soil model for lateral buckling, Proc. ISOPE-2008, Vancouver, Canada, 2008.
- O. Hededal and T. Strandgaard (2008): A 3D elasto-plastic spring element for pipe-soil interaction analysis – in short, Scandinavian Oil & Gas Magazine, Vol. 36, No 7/8, 2008.
- O. Hededal and T. Strandgaard (2008): A 3D elasto-plastic spring element for pipe-soil interaction analysis, Proc. Offshore Pipeline Technology Conference OPT2008, Amsterdam, The Netherlands, 2008.
- O. Hededal and C.S. Sørensen (2001): "Evaluation of measured movements due to NATM tunnelling in Copenhagen by means of plane models in FLAC", Proc. XV International Conference on Soil Mechanics and Geotechnical Engineering, Istanbul, August 2001.
- N. Bønding and O. Hededal (1999): "Facilitated Design of Sheet Pile Walls by Means of KSP", Proc. XII European Conference on Soil Mechanics and Foundation Engineering - Geotechnical Engineering for Transportation Infrastructure, Amsterdam, June 7-10, 1999.

O. Hededal and S.D. Eskesen (1999): "Numerical Modelling of Tunnels for the Copenhagen Metro", Proc. XII European Conference on Soil Mechanics and Foundation Engineering - Geotechnical Engineering for Transportation Infrastructure, Amsterdam, June 7-10, 1999.

C.S. Sørensen, A. Bisgaard and O. Hededal (1999): "Foundation of the Øresund Bridge", Proc. XII European Conference on Soil Mechanics and Foundation Engineering - Geotechnical Engineering for Transportation Infrastructure, Amsterdam, June 1999.

O. Hededal and C.S. Sørensen (1999): "Elasto-plastic foundation analysis of ship collision to the Øresund High Bridge", Proc. IABSE Colloquium: Foundation of Major Bridges, New Delhi, February 22-24, 1999.

C.S. Sørensen and O. Hededal (1999): "Geotechnical design considerations for Storebælt East Bridge and Øresund Bridge", Proc. IABSE Colloquium: Foundation of Major Bridges, New Delhi, February 22-24, 1999.

L. Hauge, K. Olsen and O. Hededal (1998): "Analysis of Ship Collision to Pier and Girders", Proc. Advances in Bridge Aerodynamics, Ship Collision Analysis and Operation and Maintenance. Copenhagen, May 10-13, 1998.

O. Hededal (1996): "Calibration of the ABAQUS Cap Model to Copenhagen Limestone", Proc. 9th Nordic Seminar on Computational Mechanics, Copenhagen, Denmark, 1996.

O. Hededal (1995): "Notes on Linear Elasticity and Finite Element Method" Lecture notes for *Livslang Uddannelse*, Institute of Building Technology and Structural Engineering, Aalborg University, Denmark. 1995.

O. Hededal, J. Jønsson, E.A. Jensen, H.V. Vedstesen (1995): "Elasto-Plastic Models for Concrete", Proc. 8th Nordic Seminar on Computational mechanics, Göteborg, Sweden, 1995.

O. Hededal and S. Krenk (1995): "FEMLAB - a MATLAB toolbox for FEM", Proc. Svenska Mekanikdagar 1995, Lund, Sweden, 1995.

O. Hededal and S. Krenk (1995): "FEMLAB - MatLab Toolbox for the Finite Element Method", Aalborg University, Denmark, 1995.

S. Krenk and O. Hededal (1995): A Dual Orthogonality Procedure for non-linear Finite Element Equations, "Computer methods in applied mechanics and engineering", pp. 95-107, Vol. 123, 1995.

O. Hededal and S. Krenk (1994): A Profile Solver in C for Finite Element Equations, "Computers and Structures ", Vol. 123, No. 4, pp. 743-748, 1994.

- O. Hededal and S. Krenk (1994): "Non-linear Analysis with Finite Elements - Examples collection", Aalborg University, Denmark, 1994.
- O. Hededal (1994): "Object-oriented Structuring of Finite Elements", Ph.D. Thesis, Aalborg University, Denmark, 1994.
- O. Hededal (1994): "ObjectFEM - an object oriented framework for finite element programming", Proc. 7th Nordic Seminar on Computational Mechanics, Trondheim, Norway, 1994.
- O. Hededal (1993): "Finite Element with C++ Classes", Proc. 6th Nordic Seminar on Computational Mechanics, Linköping, Sweden, 1993.
- J.P. Ulfkjær, O. Hededal, I.B. Kroon and R. Brincker (1993): "Simple Application of Fictitious Crack Model for Reinforced Concrete Beams." Proc. IUTAM Symposium on Fracture of Brittle Disordered Materials: Concrete, Rock and Ceramics. University of Queensland, Australia. September 20-24, 1993.
- S. Vissing and O. Hededal (1993): "A Subspace Algorithm", Aalborg University, Denmark, 1993.
- O. Hededal (1993): "Programming in C", Aalborg University, Denmark, 1993.
- O. Hededal (1992): "Object Oriented Structuring of the Finite Element Method", Proc. 5th Nordic Seminar on Computational Mechanics, Aalborg, Denmark, 1992.