



**AALBORG UNIVERSITY**  
DENMARK

**Aalborg Universitet**

**Department of Civil Engineering**

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# DEPARTMENT OF CIVIL ENGINEERING

NEWS  
AND  
FIGURES  
2014



DEPARTMENT OF CIVIL ENGINEERING  
AALBORG UNIVERSITY

**COLOPHON**

**TITLE:**

**DEPARTMENT OF CIVIL ENGINEERING,  
NEWS AND FIGURES 2014**

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# WELCOME

Looking back at the year 2014, I am very pleased with the successes and accomplishments that our department has demonstrated within teaching, research and dissemination activities.

Once again we grew in terms of staff members, as we welcomed two new teaching and research areas. The Division of Transportation Engineering was established which primarily focuses on traffic safety and intelligent transportation systems. We also welcomed the Research Group for Construction Management which addresses research issues within management of building and construction projects. Both areas will complement our already exciting areas of expertise and will contribute to further interdisciplinary cooperation.

In 2014, we also moved to our new temporary locations as we await the completion of our new building at the main campus. The first steps were taken as the cutting of the first sod took place in October. Hopefully, the time schedule will be kept and we will be moving again in the summer of 2016.

The focus for 2015 will, among others, be on the institutional accreditation and the work on a new university strategy. I am expecting that we will keep on the same positive track as we have been heading down the last few years. So, I am looking forward to all the great things that lie ahead and feel assured that our department will be up for the challenges that we meet.



Peter Frigaard  
Head of department

# MEET THE MANAGEMENT



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# OUR DEPARTMENT

The Department of Civil Engineering focuses on research concentrated on developing and impacting the building sector in the future. Research and teaching are conducted in areas which centre on understanding environmental causality and planning people's physical environment. We undertake contractual research projects for government institutions as well as private companies.

Regarding both student and research projects, we are widely experienced in collaborating with external partners. We mainly collaborate with companies within the building and construction sector, and we have a profound knowledge of the demands and legislation within this area.

New projects and co-operations are always welcome as new thoughts and ideas are best developed through dialogue!

## OUR DIVISIONS

- Division of Architectural Engineering
- Division of Transportation Engineering
  - Division of Structures, Materials and Geotechnics
  - Division of Water & Soil



# DIVISION OF ARCHITECTURAL ENGINEERING

## Research field

We work with research and education in analysis, design, construction and operation of engineering systems for commercial, industrial and institutional facilities. Our main research areas are energy-efficient building design, indoor environment and building informatics.

## Research groups

- Building Informatics
- Indoor Environmental Engineering
- Strategic Research Centre on Zero Energy Buildings (ZEB)



## HEAD OF DIVISION

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# DIVISION OF STRUCTURES, MATERIALS AND GEOTECHNICS

## Research field

Our research field revolves around both theoretical and numerical modelling and experimental verification within the field of structural mechanics, structural materials and geotechnics.

## Research groups

- Advanced Structural Engineering
  - Danish Centre for Risk and Safety Management (RISK)
    - Innovative Structures
    - Offshore Foundations
  - Geotechnical Engineering



## HEAD OF DIVISION

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# DIVISION OF TRANSPORTATION ENGINEERING

## Research field

Our research and teaching is centered on Intelligent Transport Systems (ITS), road safety, road construction, traffic management and public transportation in built-up and rural areas. We also work with various aspects of physical planning, such as local planning and development with specific focus on the city, urban development and planning and development of rural towns and areas.

## Research groups

- Traffic Research Group



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## DIVISION OF WATER & SOIL

### Research field

Our research focuses on several areas including uncertainty modelling, reliability assessment and risk analysis of structures. Another major research area is modelling hydrological processes in urban areas and chemical processes in sewage systems and drinking water supply systems along with hydraulics in aquatic ecosystems.

### Research groups

- Coastal Engineering
- Physical Geography
- Reliability and Risk Analysis
  - Structural Dynamics
- Urban Water and Environment
  - Wave Energy



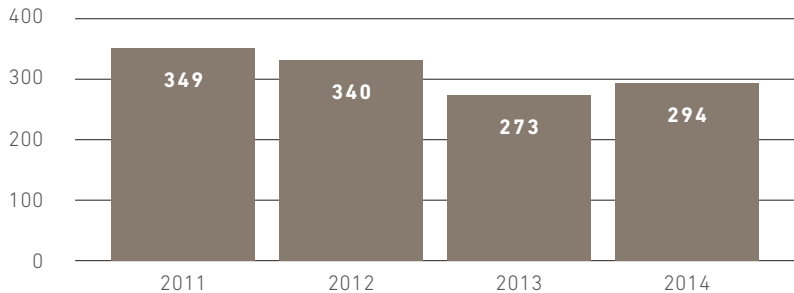
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# OUR RESEARCH

We are proud of the fact that our researchers at the Department of Civil Engineering are very productive individuals who produce a large amount of research publications each year. Below is the number of research publications that we have produced in the last couple of years. All of our research is registered in the Research Database of Aalborg University (VBN). In VBN, you can find research publications, research projects, activities, press clippings and more.

## RESEARCH PUBLICATIONS\*



\*The figures should be accepted with caution as they will typically increase as reporting is carried out continuously, including previous years.

VBN.AAU.DK



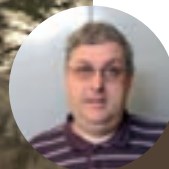
## OUR LABORATORIES

Our laboratories play a major role in our research. Numerous experiments are carried out in our laboratories, which offer the best equipment along with a knowledgeable staff.

While some equipment can be adjusted for an experiment, other equipment can be built specifically for a project or task.

### **The laboratories at the Department of Civil Engineering**

- Concrete Research
- Geotechnical Engineering
- Hydraulics and Coastal engineering
- Indoor Environmental Engineering
  - Physical Geography
  - Structural Research
- Traffic Research Laboratory



### **HEAD OF LABORATORIES**

Benjaminn Nordahl Nielsen

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# OUR PHD PROGRAMME

The PhD programme constitutes an important part of the research done at the department. During the three-year duration of the programme, the PhD student will take part in courses and teaching. The research project will culminate in a PhD thesis, which will be defended in public by the PhD student.

Another branch of the programme is the Industrial PhD programme. Here, the student will be employed at a company where the research will have its origin so working hours are divided between the company and the department.

In 2014, the total of enrolled PhD students was 52.



PhD students, newly enrolled			PhD degrees awarded		
2012	2013	2014	2012	2013	2014
14	8	16	8	12	13

# FINISHED PHD STUDENTS IN 2014

**Jesper Ellerbæk Nielsen**, Combining C- and X-band Weather Radars for Improving Precipitation Estimates over Urban Areas (2013) **Jan Jakub Zajac**, Experimental Characterization and Modeling of Advanced Polymer Composite Window Frames **Kristoffer Ahrens Dickow**, Prediction of Noise Transmission in Lightweight Building Structures **Nevena Perisic**, System Identification of Wind Turbines for Structural Health Monitoring **Jérôme Le Dréau**, Energy flow and thermal comfort in buildings: Comparison of radiant and air-based heating & cooling systems **Ivan Oropeza-Perez**, The Impact of an Extensive Usage of Controlled Natural Ventilation in the Residential Sector on Large-Scale Energy Systems **Parthkumar Gandadal Domadiya**, Mitigation of Flanking Noise Transmission in Periodic Structures of Lightweight Elements **Mohammad Javad Vahdatirad**, Reliability-Based Design of Wind Turbine Foundations – Computational Modelling **Nicolas Galiotto**, The Integrated Renovation Process: A Holistic Methodology Towards Nearly Zero Energy Buildings **Francesco Ferri**, Wave-to-wire Modelling of Wave Energy Converters: Critical Assessment, Developments and Applicability for Economical Optimisation **Søren Madsen**, Buckling of Bucket Foundations During Installation **Andrew Zurkinden**, Analysis of a Wave Energy Converter with Particular Focus on the Effects of Power Take-Off Forces on the Structural Responses **Camilla Sloth Andersen**, Udpengning af risikolokaliteter på det tosporede vejnet i åbent land baseret på data om vejens karakteristika **Christof Wehmeyer**, A Floating Offshore Wind Turbine in Extreme Wave Conditions

# OUR TEACHING

Besides from our research staff, 15 % of the teaching is given by external partners. We emphasise that our students come into contact with the surrounding world via e.g. guest lectures or actual courses held by co-operation partners.

This not only creates valuable bonds between our students and potential future employers; it also facilitates knowledge sharing at a high level between the academic universe and industry to the benefit of society. You can find information about the study programmes and courses in Aalborg University's studyguide.



**STUDYGUIDE.**  
**AAU.DK**

## Graduates from the Study Board of Civil Engineering

	2011	2012	2013	2014
Bachelor degree	80	85	79	64
Master's degree	104	121	100	133
In total	184	206	179	179

# 2014 HIGHLIGHTS

## RETIREMENTS

Bodil Jensen and Bente Jul Kjærgaard retired from the department after 43 and 29 years respectively.



## MOVING TO TEMPORARY ADDRESSES

We moved to temporary addresses before moving into our new building at the main AAU campus. We now operate on three different Aalborg addresses with the laboratories remaining at our old address, Sohngaardsholmvej 57L, and the School of Science and Engineering and the study board located at Fibigerstræde 10 and the scientific staff and administration located at Sofiendalsvej 9-11. The students have been moved to the main campus.



## CUTTING THE FIRST SOD

On October 1, 2014 Per Michael Johansen, Rector of Aalborg University, and Thomas Kastrup-Larsen, Mayor of Aalborg, cut the first sod for the new building for the Department of Civil Engineering on the main campus (see front page image). The construction area where the new building will be located will house a major expansion of the AAU campus with several new building additions.

## CONFERENCES

- Trafikdage 2014
- NGV 2014 – 2nd Nordic Ground Vibration Day



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