



**AALBORG UNIVERSITY**  
DENMARK

**Aalborg Universitet**

**Department of Civil Engineering**

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# DEPARTMENT OF CIVIL ENGINEERING

NEWS  
AND  
FIGURES  
2015



DEPARTMENT OF CIVIL ENGINEERING  
AALBORG UNIVERSITY

COLOPHON

TITLE:

**DEPARTMENT OF CIVIL ENGINEERING,  
NEWS AND FIGURES 2015**

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## WELCOME

Looking back at 2015, our four temporary locations were a challenge for us. However, I was very glad to see – despite all the practical difficulties – all the effort, good spirit and social activities which have strengthened the solidarity in the department in many creative and new ways.

The Division of Water & Soil had developed into a quite large division with an immense professional span and numerous group members. In order to streamline the research fields, we decided to divide it into two new divisions: The Division of Water and Environment headed by Jes Vollertsen and The Division of Reliability, Dynamics and Marine Engineering headed by Jens Peter Kofoed.

In 2016, our main focus is our new building. We are looking forward to new ways of working together in our “living laboratory” surroundings which will show off our competences and research fields in new and modern facilities.

Next year will also see the implementation of AAU’s strategy “Knowledge for the world” which constitutes an essential roadmap for AAU in the coming years with focus on our research and education. This will be a challenge for us in lieu of the government’s announced cutbacks.

A handwritten signature in black ink that reads "Peter Frigaard".

Peter Frigaard  
Head of department

# MEET THE MANAGEMENT



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**Head of secretariat**

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**Head of laboratories**

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**Head of division  
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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 RESEARCH DIVISIONS

- Architectural Engineering
- Reliability, Dynamics and Marine Engineering
- Structures, Materials and Geotechnics
- Transportation Engineering
- Water and Environment



## 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

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



### HEAD OF DIVISION

Kjeld Svidt

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### HEAD OF DIVISION

Jens Peter Kofoed

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## DIVISION OF RELIABILITY, DYNAMICS AND MARINE ENGINEERING

### Research field

We centre our research and teaching activities on the challenges related to the design and construction of large civil structures, port facilities, offshore structures, wind turbines and wave energy converters. We are especially focused on risk and reliability, structural dynamics, analysis of wind-generated waves, stability studies of breakwater structures and modelling, development and evaluation of various wave energy converters, power production and structural loads.

### Research groups

- Coastal Engineering Research Group
- Reliability and Risk Analysis Research Group
- Structural Dynamics Research Group
- Wave Energy Research Group



## 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
  - Innovative Structures
  - Geotechnical Engineering
  - Danish Centre for Risk and Safety Management (RISK)



### HEAD OF DIVISION

Lars Damkilde

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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



### HEAD OF DIVISION

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## DIVISION OF WATER AND ENVIRONMENT

### Research field

The majority of our research is in urban and rural environmental processes. Our focus points are hydrology and hydraulics of the urban environment, precipitation forecast, biological and chemical processes in sewerage systems and drinking water supply systems, stormwater quality management, soil physics and physical geography mainly aimed at environmental and resource issues.

### Research groups

- Water and Environment



### HEAD OF DIVISION

Jes Vollertsen

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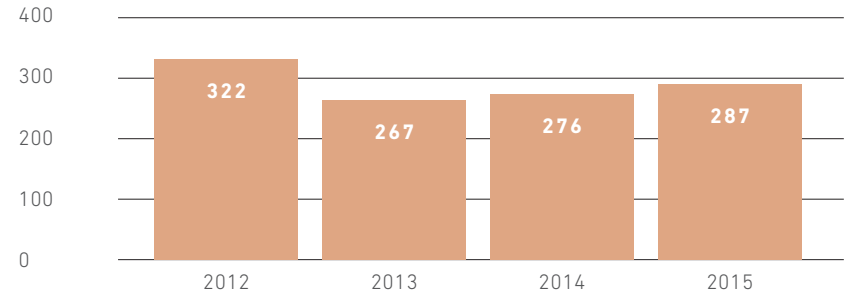
Phone: +45 9940 8504



## 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

# WORKING ENVIRONMENT AWARD

On May 18, 2015, our laboratories were awarded with Aalborg University's first ever Working Environment Award for the year 2014. Assoc. Prof. Benjaminn Nordahl Nielsen, head of the laboratories, accepted the award on behalf of himself and his colleagues at the laboratories and pointed out that this recognition was attributed to a joint effort in the laboratories.

The AAU Working Environment Committee cited the persistent and hard work in creating a change in behaviour and culture in the working environment at the laboratories as the reason for awarding the laboratories with the Working Environment Award 2014. The laboratories have now created a safer working environment, in which all students, teachers and researchers who use the laboratories must uphold the safety precautions and wear the correct safety equipment – with no exception.

The department is proud of the fine work carried out in our laboratories, and now we can also say that we handle it with the greatest care for safety.



## 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 SECRETARIAT

Our administration unit, the secretariat, plays an essential role spanning across the entire department. They administer the internal economy, carry out preparatory work for the researchers, handle internal communication, handle the employees' welfare and manage the interests and obligations both internally and externally. Their work is an important supplement to the work carried out at the department.

### Teams

- Finance and Accounts
  - HR
- Information Office
  - Service
  - Study

### HEAD OF SECRETARIAT

Pernille Bisgaard Pedersen

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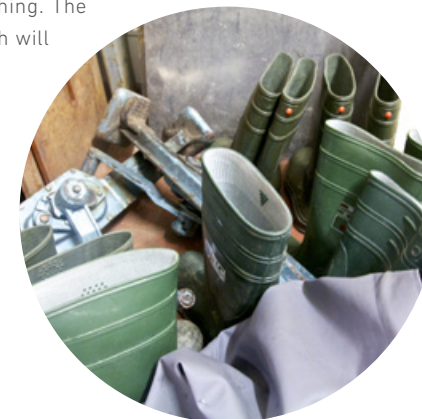


## OUR PHD PROGRAMME

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 2015, the total of enrolled PhD students was 50.



PhD students, newly enrolled			PhD degrees awarded		
2013	2014	2015	2013	2014	2015
8	16	7	12	13	11

## FINISHED PHD STUDENTS IN 2015

**Elisa Angelelli**, Hydrodynamic induced by an array of wave energy converters. Experimental and numerical analysis **Simon Ambühl**, Reliability of Wave Energy Converters **Aligi Foglia**, Bucket foundations under lateral cyclic loading **Gitte Lyng Grønbech**, Søvind Marl – Behaviour of a plastic fissured Eocene clay **Andrea Mortensen**, Energy Renovation of Danish Single-family Houses – An Investigation of Barriers and Motivation Factors **Morten Møller Jakobsen**, Wave-Structure Interactions on Point Absorbers, an experimental study **Søren Heide Lambertsen**, Fatigue and Fracture Problems in Materials and Welds **Jeppe Emil Mogensen**, Functional Textiles in Hospital Interiors **David Getreuer Jensen**, Combining weather radar nowcasts and numerical weather prediction models to estimate short-term quantitative precipitation and uncertainty **Zili Zhang**, Passive and Active Vibration Control of Renewable Energy Structures **Tao Yu**, Energy Performance of a Novel System Combining Natural Ventilation with Diffuse Ceiling Inlet and Thermally Activated Building Systems (TABS)

## 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

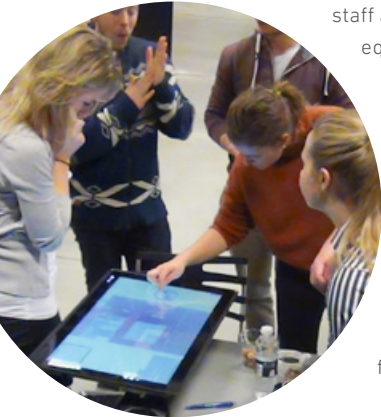
Graduates from the Study Board of Civil Engineering				
	2012	2013	2014	2015
Bachelor degree	85	79	64	66
Master's degree	121	100	133	151
In total	206	179	179	217

# FURNISHING OUR NEW BUILDING

Regarding furnishing of our new building and Mai B. Rasmussen's PhD project, we tested Knotworking, a new working method. Knotworking gathers interested parties for the purpose of solving pre-defined knots together. In this case the knots were selected room types that need furnishing in our new building.

Mai B. Rasmussen facilitated the process and gathered 20 interested parties for 1½ day and after 5 hours the result was approx. 7,000 m<sup>2</sup> of roughly furnished rooms – a process that would normally take 1–2 months. The participants consisted of external furniture suppliers and the following AAU units: employees and students from our department, interior designers from Campus Service, cleaning staff and building officers. They used new digital VR (virtual reality) equipment developed by with Evocon, an AAU originated company, in collaboration with Kjeld Svidt and Rasmus L. Jensen. The equipment consisted partly of a touchscreen for arranging room layouts with furniture and partly of Oculus Rift 3D glasses for experiencing the spatiality and furniture in 3D.

This Knotworking process will form the foundation for the purchase of furniture for and the final furnishing of our new building.



# 2015 HIGHLIGHTS

## AAU WORKING ENVIRONMENT AWARD

Our laboratories were awarded with Aalborg University's Working Environment Award for 2014 (read more on page 12)



BENJAMIN N. NIELSEN

## NEW HEAD OF DIVISION

Professor Jes Vollertsen is the new head of the Division of Water and Environment.

## ANNIVERSARY

In 2015, both Associate Professor Erik Kjems and Head of Secretariat Pernille B. Pedersen could celebrate 25 years in the service of the state.



ERIK KJEMS



PERNILLE B. PEDERSEN

## RETIREMENT

After 12 years at Aalborg University, we said goodbye to Associate Professor Egil V. Sørensen.

## TOPPING-OUT

On September 28, 2015, the Danish Building and Property Agency hosted the topping-out ceremony for our new building, which is planned for completion in 2016. Among the many speakers at the event were University Director Antonino Castrone, Aalborg's Mayor Thomas Kastrup-Larsen and Head of Department Peter Frigaard. The ceremony was well-attended by both staff and students curious to see more of the building in which they will be working and studying respectively in the near future.

TOPPING-OUT



## CONFERENCES

- Trafikdage 2015 – research, analysis and practical experience within the transport sector ([www.trafikdage.dk](http://www.trafikdage.dk))
- WEIB 2015 – offshore wave energy international Business2Business event ([www.weib.biz](http://www.weib.biz))



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