# ARCHITECTURE, SUSTAINABILITY AND TECTONICS

## THE ARCHITECTURE, SUSTAINABILITY AND TECTONICS RESEARCH GROUP AT AALBORG UNIVERSITY

DEPARTMENT OF ARCHITECTURE, DESIGN AND MEDIA TECHNOLOGY
TECHNICAL FACULTY OF IT AND DESIGN

The building sector accounts for a large part of our CO2 footprint and resource consumption. At the same time the quality of the buildings and their environment is an important factor in our quality of life. The group contributes to solving these challenges.

## RESEARCH

### BACKGROUND

The building environment today is responsible for aproximately 40 percent of our CO2 footprint. This calls for the use of new materials, new construction methods and new ways of designing the interaction between users and the build environment. This results in new challenges in producing attractive everyday architecture, including healthy and liveable environments.

### KEY RESEARCH AREAS

The research group works from the 17 UN goals for sustainability, subdivided into environmental, economic and social sustainability.

- Reducing the CO2 footprint of producing and running buildings, including e.g. user behaviour and the quality of indoor climate.
- The architectonic consequences, the tectonics of using new material and construction methods e.g. robotics.
- The building environments' influence on health, e.g. stress and related conditions.

## EDUCATION

### STUDY RELATED ACTIVITIES

We teach integrated design, in which architectural and engineering design skills are combined. We regard technical knowledge as a prerequisite for creating good architecture, and good architectural design skills as a prerequisite for doing successful technical solutions.
We regard the knowledge and skills that we provide our students with, as a major way of making our research available and operational for society.

## COLLABORATION

### WHO BENEFITS FROM OUR RESEARCH

The research is particularly interesting for building owners and users, manufacturers of buildings and building materials, public sector authorities, and legislators.

### EXTERNAL PARTNERS

Lego, Randers tegl, Weber, Densit, Keflico, CF Møller Architects, CCO Architects, JHA, Velux, festo, T.U. Berlin, Lund University, Kunstakademiets Arkitektskole, Green Building Council, MOE Engineers, Arkitema Arcitects.

## PUBLICATIONS

### IMPORTANT PUBLICATIONS

- Children in the built environment: promoting play, playful learning and creativity: What can we learn from co-creation and embodied cognitive science
- Sensorimotor brain dynamics reflect architectural affordances
- A framework for adopting adaptive thermal comfort principles in design and operation of buildings
- Development of a hybrid behavioural and thermal adaptive building envelope
- Circular Tectonics? A critical discussion of how the architectural discipline can drive ecological continuity

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## KEY PROJECTS

### CREATIVE ROBOTICS IN ARCHITECTURE

Experimental and methodological studies on how humans and robots can collaborate in creative design processes to harness co-evolution in ideation and making processes, both in off-site and on-site conditions.

### ARCHITECTURE AND THE QUALITY OF LIFE

The project explores how various spaces influence stress, health and well-being in humans.

### CRITERIA OF HEALTH AND WELLBEING IN DGNB CERTIFICATION

Development of new criteria for existing DGNB certification scheme with the aim of improving the focus on health and wellbeing in the built environment.

### THERMAL ADAPTIVE ARCHITECTURAL ENVELOPES

Experimental and methodological studies of how subjective perceived human thermal sensations can be created in buildings and how this insight is translated into exergy-based adaptive buildings envelopes

## VIDEO PRESENTATION

## CONTACT


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