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A playground for the senses

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Senselab - a playground for the senses

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SUMMARY

To facilitate a multi-disciplinary education and research program, the ‘Sense lab’, a playground for the senses, is being built, in which single and combinations of environmental conditions can be both experienced and tested.

PRACTICAL IMPLICATIONS

Senselab will lead to requirements (prevention of negative effects) and preferences (stimulation of positive experiences) for (re)designing healthy and comfortable buildings.

KEYWORDS

Semi-lab environment, experience IEQ conditions, preferences of occupants

INTRODUCTION

How to achieve a healthy and perceptually fluent indoor environment has been an issue among architects, engineers and scientists for centuries. Previous research has shown that for the establishment of basic requirements and needs a different view on indoor environment quality (IEQ) is required, in which the focus is on situations rather than single components. Also, a multidisciplinary interactive top-down approach is required to facilitate the design, construction, maintenance and operation of an indoor environment, in which the architect as well as the other stakeholders fulfil a new or different role. This new role requires a multi-disciplinary educational and research program that can help to fulfil the need for multi-disciplinary people in the building industry (Bluysen, 2013).

To facilitate this multi-disciplinary education and research program, the ‘Sense lab’, a playground for the senses, is being built at the Science Centre (part of the premises of the Technical University of Delft), in which single and combinations of environmental conditions can be both experienced and tested.

With the Sense lab it will be possible to study the effects, positive and negative, of different combinations of environmental conditions (thermal, sound, lighting and air) in different scenario’s (office workers in office buildings, children in schools, people in their homes saving energy, etc.), by changing the architectural design and choice of materials and systems:

- Change the light (distribution) by changing materials (instead of lighting), but also by changing the light itself.
- Changing the sound (distribution) by changing materials or make use of movable panels, or by introducing noise (sounds) on purpose (by a sound system) or not (e.g. noise from ventilation systems).

- The effect of different heating and air conditioning means on personal climatisation and wellbeing.
- Choice of design, materials and systems in relation to air quality.
- Assessment of total experience and wellbeing (health and comfort)!

The research performed in the Senselab will contribute to the development of a new assessment approach, which takes account of the combined effects of stress factors in buildings on people (patterns) as well as their individual profiles, and can be used to determine requirements (to prevent negative effects) and preferences (to stimulate positive experiences) for (re)designing healthy and comfortable buildings.

DIMENSIONS

The Senselab will be built around the four IEQ factors (indoor air, thermal, lighting and acoustical quality) in the studio room of the Science Centre and comprises of (see figure 1):

- *The Experience room (A)*, a room of circa 7.2 x 4.8 m² gross for integrated perception of IEQ (both research and educational purposes) in a semi-lab environment, which can also function as a meeting room to give lectures.
- Four 'test rooms' (*B*) for each of the four factors, two circa 2,4 x 3,9 m² gross and two circa 2,4 x 2,6 m² gross. In principle the 4 rooms will be designed with similar basic features and a number of flexible features.
- Control room/space with a control system + space to monitor and conduct tests.
- Storage room for equipment (at another location in the Science Centre).
- Installation space for the required heating, ventilation and cooling installations in the basement.

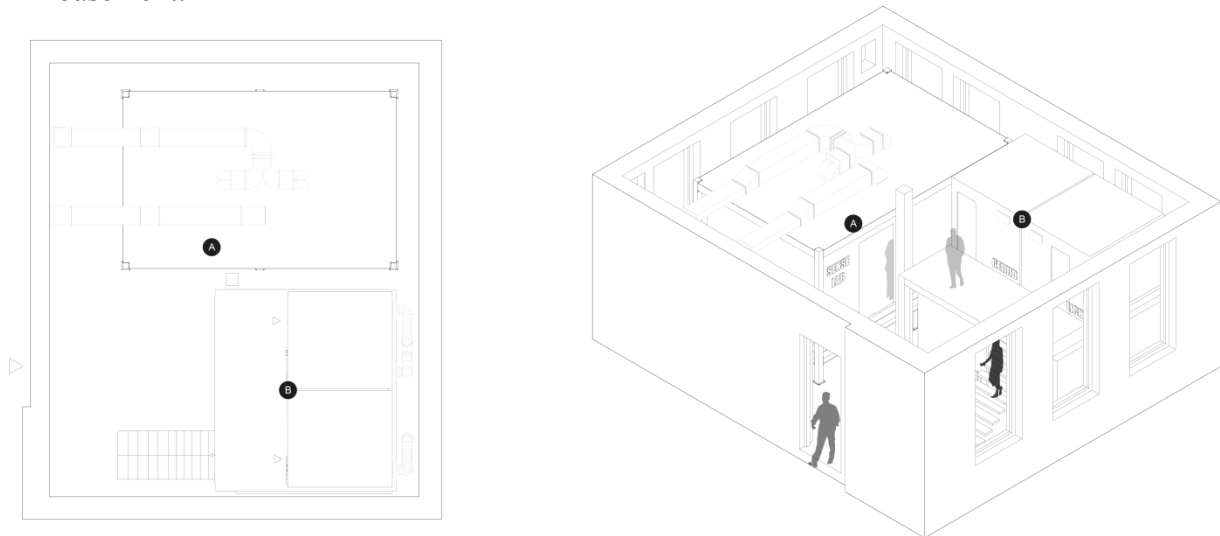


Figure 1. Schematic overview of the design.

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