Campus Service - DTU Orbit (10/03/2018)

Campus Service
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Short name: Campus Service

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Organisational unit: Section

Publications:

Access over ownership: meeting facilities in Lyngby-Taarbæk Knowledge City

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Systems Analysis, Campus Service
Authors: Nielsen, S. B. (Intern), Berg, R. B. (Intern)
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Main Research Area: Technical/natural sciences

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BFI (2015): BFI-level 1
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Web of Science (2014): Indexed yes
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Scopus rating (2013): SJR 0.344 SNIP 1.184 CiteScore 0.73
ISI indexed (2013): ISI indexed no
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Little is known on how vitamin D status is affected by adherence to UVB-limiting sun exposure guidelines. Our aim was to investigate the relationship between adherence to the Danish sun exposure guidelines and vitamin D status. In total, 3194 Danes (2625 adults, 569 children) were recruited among the general population, and more than 92% had blood samples taken both autumn and spring. Using linear regression, we associated serum vitamin D concentrations to questionnaire responses on: seeking shade, wearing a sunhat, wearing protective clothing or using sunscreen. The odds ratio (OR) of either low (<25 or 50 nmol/L) or adequate/high (≥50 nmol/L) vitamin D status was examined using logistic regression. For adults, those who always sought shade or wore protective clothing compared to those who did not had lower levels of vitamin D (autumn concentrations for shade: 7.2 nmol/L lower (-11.0--3.6 nmol/L); for protective clothing: 9.9 nmol/L lower (-13.6--6.2 nmol/L). Adherence to all four guidelines was also associated with lower vitamin D concentrations (autumn: 9.7 nmol/L lower (-14.3--5.1 nmol/L). Use of sunscreen was associated with adequate vitamin D status, as those who always sought shade compared to those who did not had an OR (95% CI) of 1.68 (1.25-2.35) of having ≥50 nmol/L during both spring and autumn. No associations were found with wearing a sunhat, and there were no clear associations for children.
In conclusion, adherence to the sun exposure guidelines on shade and protective clothing was associated with lower vitamin D status among Danish adults, but not children.

**General information**

State: Published

Organisations: National Food Institute, Research Group for Risk-Benefit, Campus Service, Danish Cancer Society, Danish Health Authority, Statens Serum Institut

Authors: Hansen, L. (Ekstern), Tjønneland, A. (Ekstern), Køster, B. (Ekstern), Brot, C. (Ekstern), Andersen, R. (Intern), Lundqvist, M. (Ekstern), Christensen, J. N. (Intern), Olsen, A. (Ekstern)

Number of pages: 14

Publication date: 2016

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**Publication information**

Journal: Nutrients

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Scopus rating (2012): SJR 0.949 SNIP 1.032 CiteScore 2.12

ISI indexed (2012): ISI indexed no

Scopus rating (2011): SJR 0.288 SNIP 0.372 CiteScore 0.8

ISI indexed (2011): ISI indexed no

Scopus rating (2010): SJR 0.115 SNIP 0.055

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StatusD, skin cancer, sun exposure guidelines, vitamin D

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Publication: Research - peer-review › Journal article – Annual report year: 2016

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**A collaborative quest for sustainability at DTU**

**General information**

State: Published

Organisations: Campus Service, Department of Management Engineering, Quantitative Sustainability Assessment, Production and Service Management, Centre for Facilities Management

Authors: Michaelsen, L. (Intern), Olsen, S. I. (Intern), Nielsen, S. B. (Intern)
DTU says yes to operational friendly buildings but how should it be done in practice?

Facilities managers often fight to be allowed to contribute their operational experiences to new building projects, but not at Campus Service of the Technical University of Denmark (DTU), where “ask the operations manager” has become a mantra for every building project in recent years, and there are currently 15 building projects under way. But how is this knowledge transfer organized in practice so that both the buildings department and the operations department maintain a good and effective relationship?

Evaluation of Damping Using Time Domain OMA Techniques

The prevailing Operational Modal Analysis (OMA) techniques provide in most cases reasonably accurate estimates of structural frequencies and mode shapes. In contrast though, they are known to often produce poor structural damping estimates, which is mainly due to inherent random and/or bias errors. In this paper a comparison is made of the effectiveness of three existing OMA techniques in providing accurate damping estimates for varying loadings, levels of noise, number of added measurement channels and structural damping. The evaluated techniques are derived in the time domain and are namely the Ibrahim Time Domain (ITD), Eigenvalue Realization Algorithm (ERA) and the Polyreference Time Domain (PTD). The response of a two degree-of-freedom (2DOF) system is numerically established from specified modal parameters with well separated and closely spaced modes. Two types of response are considered, free response and random response from white noise loading. Finally, the results of the numerical study are presented, in which the error of the structural damping estimates obtained by each OMA technique is shown for a range of damping levels. From this, it is clear that there are notable differences in accuracy between the different techniques.
Ja! Til driftsvenligt byggeri på DTU - men hvordan i praksis?

**General information**
State: Published
Organisations: Campus Service, Department of Management Engineering, Production and Service Management, Centre for Facilities Management
Authors: Rasmussen, H. L. (Intern), Nielsen, S. B. (Intern), Møller, A. B. (Intern)
Pages: 22-25
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Main Research Area: Technical/natural sciences

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Rasmussen_Nielsen_Møller2014.pdf

**Bibliographical note**
Udgivet af Dansk Facilities Management Netværk
Source: PublicationPreSubmission
Source-ID: 99830665
Publication: Communication › Journal article – Annual report year: 2014

**Sustainability at DTU from Campus Service point of view -an invitation to use campus as learning lab**
Campus Service (CAS) at DTU has the mission of servicing our University with a high quality within all areas of Facility Management: planning, building, operation and maintenance. At the same time CAS supports the vision of DTU to be a sustainable university so we try to think sustainable in all aspects of our work. DTU has set two targets in the contract with the ministry (FIVU). DTU wants to do 15% better on waste and energy in 2015. DTU will increase the recycling rate by 15% from 2010 – 2015 and DTU will use 15% less energy per man year staff and student in the same period. Both targets are ambitious and hard to reach. First part of the presentation will give an introduction to DTU’s sustainability policy, our targets and figures up until now as well as information about CAS initiatives on behavior campaigning. CAS would like to get ideas and input on how to reach the two targets. Second part of the presentation is about using our Campus as a living lab. CAS will try to support sustainability initiatives or projects from researchers and students. We are willing to share our data and if possible to try out - or test new products or solutions. CAS is also keen on getting input on doing things in another and more sustainable way. It can be hard to know which solution is the most sustainable but working together with i.e. DTU Management CAS has received valuable input for our new buildings and our daily operation and maintenance. Some examples will be given.

**General information**
State: Published
Organisations: Campus Service
Authors: Michaelsen, L. (Intern)
Number of pages: 1
Publication date: 2014

**Host publication information**
Title of host publication: Abstract Book - DTU Sustain Conference 2014
Place of publication: Kgs. Lyngby
Publisher: Technical University of Denmark (DTU)
The quest for sustainability in existing buildings

Centre for Facilities Management (CFM) at DTU has the mission of developing the management discipline Facilities Management (FM). FM deals with design, operation and development of buildings and infrastructure so that it constantly is adjusted to user needs; while also contributing to sustainability at societal level. Due to lack of professional skills, decisions about operation and renovation of buildings are made every day in Denmark and beyond, without adequate knowledge about e.g. energy management and the potential ways of integrating sustainability (social, environmental and economic). The consequence is energy-ineffective building stock and an extremely slow transmission into more sustainable buildings and cities. The professionals in facilities management has so far been overlooked as a key to ensure energy effective buildings. Through research, education and practice collaboration CFM intend to change this by upgrading the skills of especially Danish but also European facilities managers. The workshop includes an introduction to sustainability in FM (SFM) and CFM; but also participant reflections on the collective quest for sustainability in the existing buildings at DTU.

Understanding Complex Construction Systems Through Modularity

This paper develops a framework for understanding complexity in construction projects by combining theories of complexity management and modularization. The framework incorporates three dimensions of product, process, and organizational modularity with the case of gypsum wall elements. The analysis finds that the main driver of complexity is the fragmentation of the design and production, which causes the production modules to construct and install new product types and variants for each project as the designers are swapped for every project. The many interfaces are characteristics of an integral system, rather than a modular, although the industry forces modular organizational structures. This creates a high complexity degree caused by the non-alignment of building parts and organizations and the frequent swapping of modules.
Realizing Sustainability in Facilities Management: a pilot study at the Technical University of Denmark

Purpose: The research project “Sustainability in Facilities Management” addresses the challenge of integrating sustainability in facilities management of existing facilities, to achieve measured improvement of environmental and social performance, to fulfill strategic responsibilities and create shared value. The paper presents a pilot case study on sustainability in facilities management and is intended for a mixed audience of practitioners and researchers. It draws upon the case study findings to establish a baseline of performance and presents practical management implications of integrating sustainability in facilities management (FM).

Design, methodology and approach: The approach uses an action-oriented research methodology as a means of co-generation of knowledge on realization of sustainability in FM. Case studies take a phased, multi-method approach
including organizational profiling, stakeholder interviews, focus groups, usability evaluations and practice-research workshops. The Technical University of Denmark (DTU) is the pilot case of an international collaboration, and more studies are planned to follow.

Findings: The paper presents a framework for qualitative research on Sustainable Facilities Management (SFM), which can guide future research on Sustainability in FM and increase comparability between case studies. The research identifies the challenges and opportunities for integrating ecological, social and economical sustainability in university FM. The paper presents the analysis and conclusions of the pilot case study in the period 2011-2012, including reflections of the case study framework and methodology.

Practical implications: FM can play an important role in the transition towards sustainable FM, and this paper presents the lessons learned in the pilot study with conclusions drawn from both practice and research. The lessons learned at the Technical University of Denmark (DTU) are particularly relevant for universities and other public building owners, their Facilities Managers and consultants.

Research limitations and implications: The paper is based on literature studies, qualitative research and the preliminary analysis of a single, pilot case study of The Technical University of Denmark. Progress with the other complementary cases will be included in the presentation. The cases should be supplemented by more research on sustainable facilities management.

Originality and value: The paper is based on action research to establish a collaborative framework in late 2011 and the findings of the pilot study, and have not been published before.

**General information**

**State:** Published

**Organisations:** Department of Management Engineering, Production and Service Management, Campus Service, Zürcher Hochschule für Angewandte Wissenschaften - Institut für Facility Management, CFM Manchester

**Authors:** Nielsen, S. B. (Intern), Møller, J. S. (Intern), Jäschke, S. (Ekstern), Alexander, K. (Ekstern)

**Pages:** 237-249

**Publication date:** 2012

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**Title of host publication:** Proceedings of the 11th EuroFM Research Symposium

**Main Research Area:** Technical/natural sciences

**Conference:** 11th EuroFM Research Symposium (EFMC 2012), Copenhagen, Denmark, 23/05/2012 - 23/05/2012

**Action research, Environmental, Social and economical sustainability, Existing buildings**

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Realizing_Sustainability.pdf

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**Publication:** Research - peer-review › Article in proceedings – Annual report year: 2012

**Projects:**

RIBuild

RIBuild will strengthen the knowledge on how and under what conditions internal thermal insulation is to be implemented in historic buildings, without compromising their architectural and cultural values, with an acceptable safety level against deterioration and collapse of heavy external wall structures. The general objective of RIBuild is to develop effective, comprehensive decision guidelines to optimise the design and implementation of internal thermal insulation in historic buildings across the EU. RIBuild focuses on heavy external walls made of stone, brick and timber framing, as most historic buildings are made of these materials. The general objective is achieved through three main activities

- To obtain a thorough knowledge level to characterise the eligibility of the building for a deep internal thermal insulation renovation. This knowledge is obtained through screening of historic buildings, investigation of material properties and threshold values for failure
- To determine the conditions under which different internal insulation measures are reliable and affordable measures based on probabilistic modelling of the hygrothermal performance, the environmental impact and the cost/benefit
- To develop a set of comprehensive decision guidelines, which are demonstrated in a number of buildings. RIBuild addresses the most difficult retrofitting measure of historic buildings: internal thermal insulation. The adoption of knowledge developed by RIBuild contributes to sustainable historic buildings with improved energy efficiency implying an easier conversion of energy supply from inefficient fossil fuels to efficient renewable energy sources. RIBuild also assesses the hygrothermal performance of the building construction, thus no collateral damage occurs; in case of failure an easy roll back of the measures is possible. The guidelines developed in RIBuild strongly support the deep and holistic retrofitting approach which historic buildings face in the coming years

**Work packages**

The RIBuild research programme is divided into eight inter-correlated work packages (WPs). For a short description of each work package, please see the following.

**WP1: Pre-renovation assessment**
Examines common structural elements of historic buildings, determines their physical properties and classifies them according to type. The objective is to observe and describe the main symptoms of a deteriorating building envelope and study their possible causes.

WP leader: RTU
Participants: AAU, TUD, KUL, UNIVPM, DTU, SP, HES-SO

WP2: Material characterisation
Provides data for material properties and threshold values for historic building materials and existing insulation materials as a background for material characterisation models and guidelines for safe retrofitting measures.

WP leader: AAU
Participants: RTU, TUD, KUL, UNIVPM, DTU, SP, HES-SO, INTROFLEX

WP3: Case studies and laboratory measurements
Supports the research with high quality measurement data from both laboratory experiments on components and on-site monitoring of test buildings.

WP leader: TUD
Participants: AAU, RTU, KUL, UNIVPM, DTU, SP, INTROFLEX

WP4: Probabilistic assessment of internal insulation solutions
Develops an efficient strategy for the probabilistic hygrothermal assessment of internal solutions.

WP leader: KUL
Participants: AAU, TUD, HES-SO

WP5: Development of cost/benefit analysis and environmental impact assessment methodologies
Develops a probabilistic assessment methodology for assessing the environmental impact and cost/benefit of internal insulation solutions. The methodologies are based on Life Cycle Impact Assessment (LCA), Life Cycle Cost (LCC) and Cost-Optimal (CO) analysis.

WP Leader: UNIVPM
Participants: AAU, RTU, DTU, HES-SO

WP6: Application and evaluation of guidelines
Develops and assesses the methodology for internal insulation of historic buildings, based on the methodologies developed in WP4 and WP5.

WP Leader: DTU
Participants: AAU, RTU, TUD, KUL, UNIVPM, SP, HES-SO, INTROFLEX, EMA

WP7: Communication and dissemination
Coordinates the overall communication and network partners of RiBuild.

WP Leader: AAU
Participants: RTU, TUD, KUL, UNIVPM, DTU, SP, HES-SO, INTROFLEX, EMA

WP8: Project management
WP 8 is in charge of the overall management of RiBuild.

WP leader: AAU

Department of Civil Engineering
Section for Building Design
Section for Indoor Climate and Building Physics

Campus Service
Period: 01/01/2015 → 31/12/2019
Number of participants: 5

Internal insulation
Project ID: RiBuild
Project participant:
Hansen, Tessa Kvist (Intern)
Rode, Carsten (Intern)
Nordic Built Campus Retrofit - CARE
Nordic Built Campus retrofit (CARE) targets to improve cooperation among businesses in the Nordic building sector by testing co-creative and innovative retrofit concepts and processes in Nordic campuses. The showcases with measured evidence of energy- and user-effectiveness are reported in forms of strategic guidelines, tactical use and design manuals and criteria for retrofit business. The outcomes can be applied both in campuses and urban areas in development work and in providing service.

Department of Management Engineering
Production and Service Management
Centre for Facilities Management

Campus Service
Period: 01/01/2014 → 31/12/2015
Number of participants: 2
FM, Retrofitting, Sustainability, Campus, Usability
Acronym: CARE
Project participant:
Nielsen, Susanne Balslev (Intern)
Møller, Jacob Steen (Intern)

Activities:

21th meeting Innovation platform
Period: 7 Apr 2014 → 8 Apr 2014
Jan Karlshøj (Organizer)
Department of Civil Engineering
Section for Building Design
Campus Service

Description
Markus Lampe/DTU Campus Service and Niels Treldal/DTU Byg/Rambøll participated also in the planning.

Innovation platform

Related event

21th meeting Innovation platform
07/04/2014 → 08/04/2014