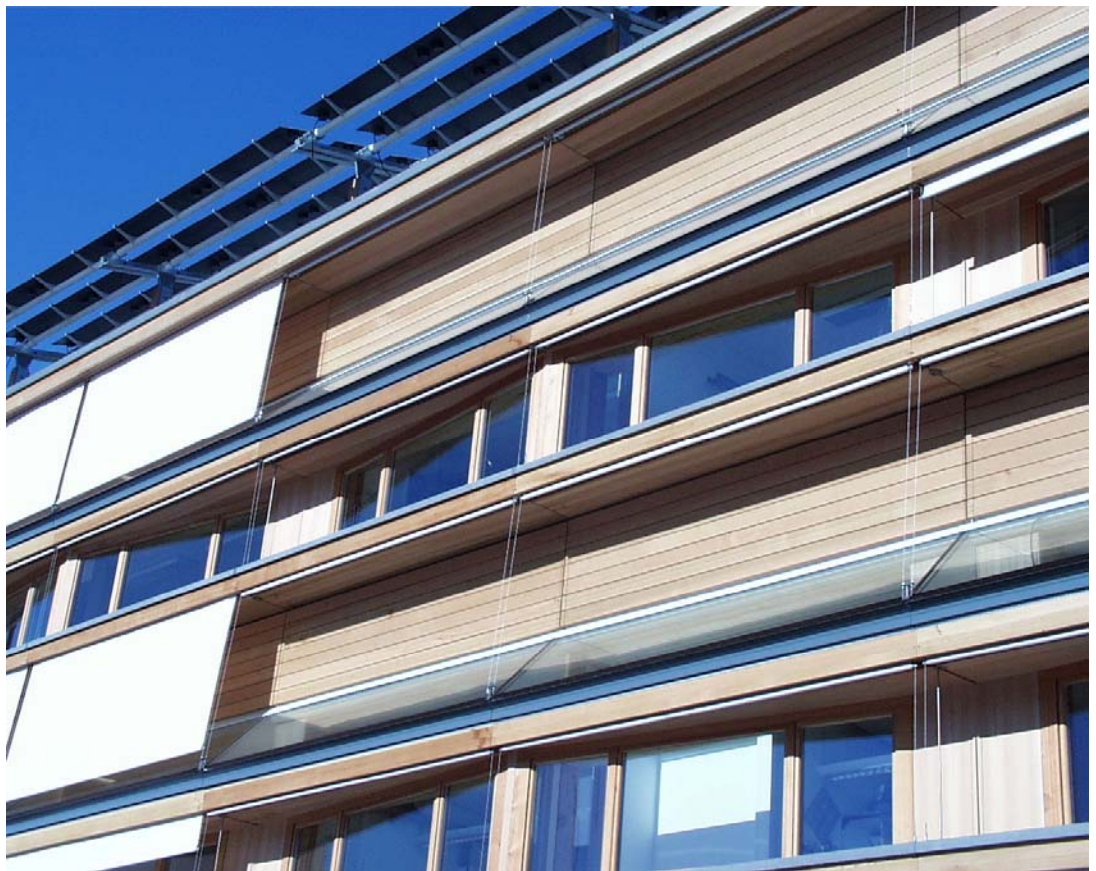


SOLAR ENERGY AND BUILDING PHYSICS LABORATORY

LABORATOIRE D'ÉNERGIE SOLAIRE ET DE PHYSIQUE
DU BÂTIMENT



Activity Report 2010



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Innovations for Renewable Energy Use in the Built Environment

Solar Energy and Building Physics Laboratory (LESO-PB)

Swiss Federal Institute of Technology Lausanne (EPFL)
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EPFL Solar Energy and Building Physics Laboratory (LESO-PB)

ACTIVITY REPORT 2010

The Solar Energy and Building Physics Laboratory (LESO-PB) works at the forefront of research and technological development in renewable energy, building science and urban physics. It is part of the Civil Engineering Institute (IIC) of the School of Architecture, Civil and Environmental Engineering (ENAC) of the Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland. Placed under the responsibility of Prof. Dr Jean-Louis Scartezzini and four group leaders, the laboratory counts about 50 scientists, engineers and technicians. This report presents the teaching, research and dissemination activities for 2010.

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RESEARCH

INTRODUCTION

The research activities of the Solar Energy and Building Physics Laboratory focus on the development and implementation of energy efficient and renewable energy technologies in the built environment.

Basic and applied research is carried out in the following fields:

- Intensive use and perception of daylight
- Sustainable urban development
- Bio-mimetic building control
- Renewables integration in the built environment
- Nanotechnology for solar energy conversion
- Computer modelling of complex systems

Research is carried out in the context of national and international collaboration with renowned academic institutions and industrial partners (National Research Programmes, European Framework Programmes, International Energy Agency). Results are widely published in refereed scientific journals and conferences.

2010 AWARDS AND DISTINCTIONS

Name	Prize, distinction	Year
MER Dr D. Robinson	Visiting Professor, Technical Research Centre of Finland	2010
F. Haldi, MER Dr D. Robinson	Best Paper Award – Building and Environment Journal	2010
L.O.. Grobe, S. Wittkopf, A. Pandey, Y. Xiaoming, A. Kian Seng, J.-L. Scartezzini	Best Paper Award Finalist – International Conference on Applied Energy – National University of Singapore	2010

DAYLIGHTING AND PERCEPTION

Group leader: Prof. J.-L. Scartezzini
 Research associate: Dr Mirjam Münch
 Postdoctoral researcher: Dr Jérôme Kämpf
 PhD students: Apiparn Borisuit, Chantal Basurto



Study to test the impact of light on human EEG brain activity

Published work relates to

- Anidolic daylighting systems
- Integrated day- and electric lighting systems
- Scanning sky simulator and automated heliodon
- Bidirectional reflection and transmission goniophotometer
- Experimental and ergonomical daylighting test modules
- Daylighting computer design and analysis tools
- Circadian rhythms in humans

2010 Activities

The deployment of the post-doctoral fellowship on “Daylighting and Perception” endowed by the Velux foundation led to the building up of a new photobiological test chamber : studies on brain responses to light are undertaken in the latter in collaboration with Prof. Michael Herzog (Brain and Mind Institute/School of Life Sciences). Two experimental test modules located on the EPFL campus were fully re-equipped in order to be able to proceed to photometric monitoring of advanced daylighting systems and test human subjects under different daylighting conditions.

Current Projects

Daylighting Design and Visualisation Tools

Funding: Swiss Federal Office of Energy (SFOE)

Duration: 2009-2012

The project is aiming to set up a daylighting design tool for the visualisation of the light redirecting properties of complex fenestration systems, which will be complemented by an advanced ray-tracing computer simulation algorithm.

Integrated Multifunctional Glazing for Dynamical Daylighting

Funding: Swiss Federal Office of Energy (SFOE)

Duration: 2009-2012

The project is aiming to set the bases for an integrated multi-functional glazing for dynamic daylighting using novel microstructures which will redirect sunlight into office rooms.

Postdoctoral Fellowship in Daylighting & Perception

Funding: VELUX Foundation

Duration: 2008-2012

This project is aiming to strengthen the education and research activities in the fields of building science and chronobiology. It is expected moreover to initiate innovating activities in relation to psycho-physiological aspects of daylight with an emphasis on human response factors, such as the perception of three-dimensional spaces and luminous environment.

PhD theses published in this domain at LESO-PB

- *Energetic, visual and non-visual aspects of office lighting*, Friedrich Linhart, EPFL PhD Thesis #4587 (2010)
- *Comparing physical and virtual methods for daylight performance modelling including complex fenestration systems*, Anothai Thanachareonkit, EPFL PhD Thesis #4130 (2008)
- *Bayesian optimisation of visual comfort*, David Lindelof, EPFL PhD Thesis #3918 (2007)
- *Innovative bidirectional video-goniophotometer for advanced fenestration systems*, Marilyne Andersen, EPFL PhD Thesis #2941 (2004)
- *Méthode expérimentale d'évaluation des performances lumineuses de bâtiments*, Laurent Michel, EPFL PhD Thesis #2042 (1999)
- *Systèmes anidoliques d'éclairage naturel*, Gilles Courret, EPFL PhD Thesis #2026 (1999)

Prizes in this domain

- Marilyne Andersen, EPFL PhD Thesis #2941 (2004), Chorafas Award 2005

SUSTAINABLE URBAN DEVELOPMENT

Group leader: MER Dr Darren Robinson

Postdoctoral researchers: Dr Jérôme Kaempf, Dr Wanjing Li

PhD students: Diane Perez, Urs Wilke, Olivier Pol

Visiting researchers: Maria Papadopoulou, Dapeng Li



The relatively sustainable district of Hammarby Sjöstad, Sweden

The principal mission of this group is, through the simulation of physical processes, to better understand how to optimise the sustainability of **urban systems**, predominantly from environmental but also from social and economic perspectives.

Specific research interests include:

- Simulation and evaluation of resource fluxes (energy and matter) in urban systems
- Demand and supply side control of urban energy flows
- Urban microclimatology
- External environmental comfort and social wellbeing
- Stochastic modelling of human behaviour

Published work relates to

- Modelling and optimisation of urban energy fluxes
- Occupant behaviour and comfort
- Sustainable urban design
- Thermodynamics in the city
- Radiosity algorithms and internal illumination prediction

2010 Activities

This year saw the emergence of a maturation of our work in both behavioural modelling and urban energy modelling. For the former we now have sound models predicting occupants' presence, their related adaptation of the building envelope and how this links with perceived comfort. For the latter we have seen very encouraging first applications of our urban energy modelling tool CitySim at scales ranging from a single building to an urban district. We have also concluded the preparation of our book "Computer modelling for sustainable urban design", which harmonises our work in urban modelling over the past decade. This book will be published early in 2011.

Current Projects

IEA ECBCS Annex 51 – Energy Efficient Communities: Case Studies and Strategic Guidance for Urban decision Makers

Funding: Swiss Federal Office of Energy (SFOE)

Duration: 2009-2012

Participation in IEA ECBCS Annex 51 "Energy Efficient Communities: Case Studies and Strategic Guidance for Urban Decision makers". Contributions of case study material to the relevant sub-tasks. Preparation of a chapter on Urban Modelling for a book to be published by the members of this Annex.

Investigation of Strategies Leading to a 2kW City Using Bottom-Up Models of Urban Energy Flows

Funding: Swiss National Science Foundation (SNSF)

Duration: 2009-2012

In this project we will develop a detailed spatially explicit model of the dynamic flows of energy and matter within a city due to transportation, the operation of buildings and the activities accommodated by them. This will involve the further development and integration of CitySim -- the most fully developed model available for explicit simulation of building-related energy flows in urban settlements --and MATSIM --a detailed transport micro-simulation model. Once integrated, calibrated and validated, it will be applied to the city of Zürich to produce new guidance for its development up until 2050, with a view to achieving a 2000W/capita city.

Innovative Planning and Management Instruments of Urban Energy Systems

Funding: EPFL Energy Center

Duration: 2009-2012

In this project we will work closely with municipalities, the EPFL Energy Centre as well as the Industrial Energy Systems Laboratory at EPFL to develop a new urban energy planning tool for use by municipalities. The purpose of this tool will be to support municipalities' urban energy planning and investment decisions.

HOLISTIC - Holistic Optimisation Leading to Integration of Sustainable Technologies in Communities

Funding: European Union (EU) 6th Framework Program

Duration: 2007-2012

The HOLISTIC project aims to stimulate a paradigm shift in the use of energy within communities to more sustainable patterns. It will demonstrate how this transformation can be initiated in three typical communities, in Dundalk (IRE) Mödling (AU) and Neuchâtel (CH), by acting on every aspect of community life. The role of the LESO-PB within this 32MEuro European RTD project is to develop new software for optimising the energy performance of urban districts.

PhD theses published at LESO-PB in this domain

- *Towards a unified model of occupants' behaviour and comfort for building energy simulation* F. Haldi, EPFL PhD Thesis #4587 (2010)
 - *On the Modelling and Optimization of Urban Energy Fluxes*, J. Kaempf, EPFL PhD Thesis #4548 (2009)
 - *Multiscale Modelling of Urban Climate*, A. Rasheed, EPFL PhD Thesis #4531 (2009)
 - *Simulating occupant presence and behaviour in buildings*, Jessen Page, EPFL PhD Thesis #3900 (2007)
-

Prizes in this domain

- Frédéric Haldi, Darren Robinson: Best Paper, *Building and Environment Journal*: 2009, 2010.
- Darren Robinson: Visiting Professorship, *Technical Research Centre of Finland*.
- Darren Robinson: *Ken Dale Travel Bursary*, CIBSE, 2008.
- Darren Robinson and Andrew Stone: *Napier-Shaw Medal*, CIBSE, 2007.

BIO-MIMETIC BUILDING CONTROL

Group leader: Dr Nicolas Morel

PhD students: David Daum, Nikos Zarkadis



Self-adaptive control system

Bio-mimetic control of building services (heating, cooling, ventilation, blinds, electric lighting) can simultaneously optimize energy use and indoor comfort (thermal, visual, air quality) through the use of advanced computer methodologies such as artificial neural networks, genetic algorithms, fuzzy logic, or advanced optimization algorithms. Our laboratory investigates control algorithms allowing at the same time:

- an optimal response to changing conditions (weather, building occupancy, lighting levels, thermal characteristics)
- a progressive adaptation to (possibly changing) building characteristics and to user preferences.

Research projects normally include two steps:

- development of innovative control algorithms and evaluation with computer simulation tools
- testing under real situations and evaluation of energy and comfort performances as well as acceptance by users.

Most bio-mimetic controllers are evaluated in the LESO building, which represents a powerful tool for our group.

Published work relates to

- Self-adaptive integrated building control systems
- Blind and electric lighting control algorithms
- Advanced control of electrochromic glazing
- Genetic algorithms for adaptation to user preferences
- Fuzzy logic for implementing building physics expert knowledge into the control algorithms
- Artificial neural networks for adaptive models and various control systems (for instance thermal model of the building or weather evolution).

Activities 2010

This year was devoted to the exploration of a new optimization algorithm for a Fuzzy Logic controller, allowing to simultaneously increase energy savings and user comfort. Furthermore, we have started to investigate the issue of an optimal (predictive) control algorithm for electrochromic (EC) glazings, taking into account the relatively slow response (around 10 to 15 minutes) of the commercially available EC glazings. The first research project has been successfully completed, and the second one (control of EC glazings) is still ongoing, with final results expected for beginning of 2012. Moreover, a third project has been started in 2010 concerning the optimization of building service control algorithms in the special case of historical buildings, taking into account the specific conservation constraints leading to sub-optimal physical characteristics of the building envelope.

Current Projects in Biomimetic Building Control

Advanced Control of Electrochromic Glazing

Funding: Swiss Federal Office of Energy (SFOE)

Duration: 2009-2012

Electrochromic (EC) glazings might be used as an alternative to conventional mobile solar shadings or solar protection glazings, which are not well suited to most weather conditions and as a rule not efficient enough against overheating. EC glazings have until now essentially been actuated manually by the users. Some elementary control schemes have also been proposed, but the time characteristics of these glazings have not been considered. Therefore, a predictive algorithm, like those used for controlling building services, taking into account the thermal inertia, may bring some advantages with regard to user comfort (both thermal and visual). The project includes the development of an adequate control strategy, and the experimentation of this strategy in an office room of the LESO building, with real persons.

CCEM-SuRHiB: Sustainable Renovation of Historical Buildings

Funding: Swiss Competence Center for Energy and Mobility (CCEM)

Duration: 2009-2012

Historical buildings, if normally heated, cause relatively high energy consumption. As their façades need to be conserved, the thermal insulation of such buildings is difficult and risky. The moisture balance of walls has to be carefully considered besides the energy balance. Internal insulation that could effectively reduce thermal losses would hinder the drying process of walls. A careful risk assessment and robust guidelines have to be developed. A highly insulating light weight plaster finish based on aerogel particles, which insulates like polystyrene – inside or outside - but is open for moisture diffusion, is developed and tested in this project. Furthermore, appropriate heating systems and optimal solar integration are studied by LESO-PB.

CCEM Retrofit: Advanced Energy-Efficient Renovation of Buildings

Funding: Swiss Competence Center for Energy and Mobility (CCEM)

Duration: 2007-2010

CCEM Retrofit aims to improve the energy balance and comfort of buildings in the framework of renovation. In this context, the LESO-PB focuses on the optimization of a control algorithm for blinds and electric lighting implemented with Fuzzy Logic, using a new optimization technique based on Evolutionary Algorithms. The developed algorithm allows simultaneous optimizing of energy consumption and thermal comfort. Besides the algorithm development and simulation tests, the Laboratory also carries out measurements in two office rooms of the LESO building in order to assess the correct operation of the controller and to evaluate the acceptance by real users.

PhD theses published in this domain at LESO-PB

- *On the adaptation of building controls to the envelope and the occupants*, David Daum, EPFL PhD Thesis #4935 (2010)
- *Bayesian optimisation of visual comfort*, David Lindelöf, EPFL PhD Thesis #3918 (2007)
- *Simulating occupant presence and behaviour in buildings*, Jessen Page, EPFL PhD Thesis #3900 (2007)
- *Using Genetic Algorithms to Take into Account User Wishes in an Advanced Building Control System*, Antoine Guillemin, EPFL PhD Thesis #2778 (2003)

Prizes in this domain

- Antoine Guillemin, EPFL PhD Thesis #2778 (2003)

BUILDING INTEGRATION OF RENEWABLE ENERGIES

Group leader: Ing. EPFL Christian Roecker
 Postdoctoral researcher: Dr Maria Cristina Munari Probst
 PhD student: Raquel Peres Gagliano
 Research assistant: Marja Edelmann



Façade integrated evacuated solar collectors (Sunny Woods, arch. Beat Kämpfen)

Many building surfaces are ideally suited for the use of solar energy, but high costs, technical and aesthetic considerations have long kept building owners and architects from using even a small part of this potential. This is why the research group "Renewables Integration into the Built Environment" addresses the issue of optimal architectural integration of photovoltaic and thermal solar systems.

Major progress has been made in photovoltaics integration in the framework of several international projects over the last years. Currently, the group focuses on the integration of solar thermal technology and is co-leading the new IEA Task 41 "Solar Energy and Architecture".

Published work relates to

- Façade integration of solar thermal systems
- Criteria for successful architectural integration of active solar systems (PV & ST)
- Façade and roof integration systems for photovoltaics (pilot installations / international exhibition and testing centre for integrated photovoltaics "Demosite")
- Ergonomic interface for simulation software and "wizard" expert system

2010 Activities

One important activity was the collaborative work with international colleagues to establish and launch a new IEA SHCP Task "Solar Energy and Architecture" (Task 41). The LESO-PB has taken the lead of Subtask A "Criteria for Architectural Integration".

Collaboration with EDF has been established leading to the financing of a PhD thesis "Architectural Solar Design for Collective Residential Buildings".

Work on a new architect specific interface for LESOSAI (building physics and solar thermal simulation software) has been pursued, implementing a "wizard" concept for data entry. The possibilities of implementing the coloured glasses for solar collectors is on the way, in collaboration with an industrial partner.

Architectural integration research and teaching work has been continued, in collaboration with several Swiss institutions (SUPSI, HSLU, Swissolar).

Current Projects

ECLEER – Architectural Solar Design for Collective Residential Buildings*Funding: Electricité de France (EDF)**Duration: 2009-2013*

The goal of this project is to study the possibilities and propose solutions to use solar thermal energy in the field of collective residential buildings. One important option is to take the opportunity offered by retrofit work on existing buildings to combine it with the installation of a proposed innovative product.

Solar Energy and Architecture - IEA SHC Task 41*Funding: Swiss Federal Office of Energy (SFOE)**Duration: 2009-2012*

The main goal of the Task is to help achieving high quality architecture for buildings integrating solar energy systems, mainly by improving architects' qualifications and enhancing solar thermal manufacturers' awareness of building integration issues.

LESOSAI-POLYSUN – Computer Simulation Tool for Architects*Funding: Swiss Federal Office of Energy (SFOE)**Duration: 2009-2010*

The goals of this project are twofold:

- combine in one tool the building energy model and all passive and active “solar” gains, allowing the user to optimise his project by testing complete solar variants in the early design stage.
 - broaden the use of this tool within the architects community by enhancing the ergonomics of the user interface and reducing the amount of data input, providing default values for solar systems and building elements.
-

Coloured Solar Thermal Collectors*Funding: Swiss Federal Office of Energy (SFOE)**Duration: 2008-2010*

Standard solar collectors are difficult to integrate into facades due to their dark and irregular absorber surfaces visible behind the front glass, and lack of corresponding dummy elements. This project proposes to use coloured interference filters on the front glass to solve the glass transparency problem, therefore enhancing the architectural “integrability” of the collectors and allowing the use of matching dummy elements.

PhD theses published in this domain at LESO-PB

Architectural integration and design of solar thermal systems, Maria Cristina Munari Probst, EPFL Thesis 4258 (2008)

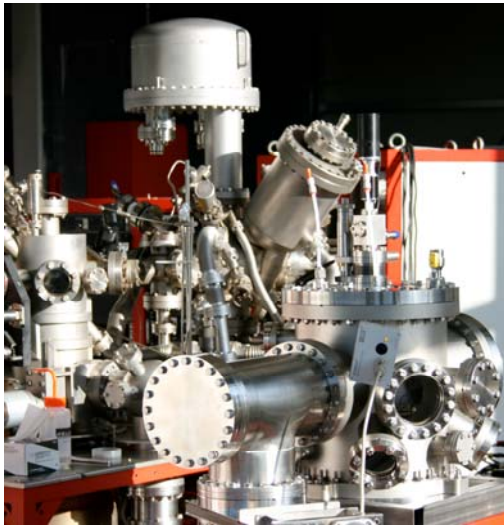
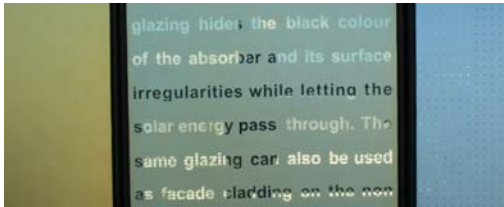
NANOTECHNOLOGY FOR SOLAR ENERGY CONVERSION

Group leader: Dr Andreas Schueler

Postdoctoral researchers: Dr Virginie Le Caër

PhD students: Martin Joly, Antonio Paone, Stefan Mertin, André Kostro

Visiting researchers: Yannik Antonetti, Thomas Gascou, Mario Geiger, Marina Gonzalez Lazo, Michael Marendig



Due to their fascinating optical and electronical properties, nanometric scaled structures play an important role in solar energy conversion. The research group "Nanotechnology for Solar Energy Conversions", develops and characterizes novel nanostructured materials for solar energy applications. The nanocomposite coatings consist typically of dielectrics, semiconductors or metal nanocrystals embedded in a dielectric matrix. Applications include antireflection coatings on solar collector glazing, colored coatings with high solar transmittance for novel glazing of solar thermal façades, photoluminescent quantum dot solar concentrators for photovoltaic energy conversion and optical selective absorber coatings for thermal solar collectors and thermoelectric power generation.

The research group carries out fundamental research on novel nanocomposite materials and thin film materials and promotes the introduction of novel solar technologies through upscaling of the corresponding innovative manufacturing processes.

Published work relates to

- Colored glazed solar collectors, active solar thermal façades
- Quantum dot solar concentrators
- Highly durable selective solar absorber coatings
- Novel thermochromic solar absorber coatings for overheating protection

Activities 2010

Major highlights from our activities include:

- Novel nanocomposite selective solar absorber coatings deposited on stainless steel tubes of 2m in length: clean low-cost sol-gel process, good optical performance, excellent stability at elevated temperatures in air
- Deposition of novel switchable selective solar absorber coatings
- Production of first samples of novel microstructured glazing for daylighting
- Construction and testing of a new vacuum chamber for the plasma deposition of novel nanocomposite solar coatings
- Putting into operation an UHV photoelectron spectrometer for the characterization of the electronic properties of novel nanocomposite solar coatings

Current Projects

Technology Transfer of Coloured Solar Thermal Collectors

Funding: SwissINSO Trade & Invest Ltd

Duration: 2009-2012

At LESO, novel nanocomposite coatings on architectural glazing for solar active thermal façades have been developed. The electronic and optical properties of the novel nanocomposite materials are thoroughly characterized. LESO-PB provides the transfer of the developed technology from science to market - including the upscaling of the processes to industrial production. The novel glazing will allow a perfect architectural integration of solar thermal collectors into the building envelope, thereby creating new possibilities for water and space heating as well as for solar cooling.

Advanced Switchable Selective Absorber Coating for Overheating Protection of Solar Thermal Collectors

Funding: Swiss Federal Office of Energy (SFOE)

Duration: 2009-2011

Overheating and the resulting stagnation of solar thermal collectors is a common problem even in central European latitudes. A promising way to protect solar thermal systems without any mechanical device (e.g. for shading or for pressure release) is to provide them with a coating which exhibits a change in optical properties at a critical temperature T_c . This project aims at the development of such coatings with thermochromic, "intelligent" properties.

Heat and Corrosion Resistant Nanocomposite Selective Solar Absorber Coatings by Sol-gel Processing

Funding: Commission for Innovation and Technology (CTI)

Duration: 2008-2010

This project aims at the development of novel nanocomposite selective absorber coatings for solar thermal collectors. By the new production process, highly toxic CR(VI) shall be completely avoided. The novel coatings shall be absolutely chrome-free, more corrosion-resistant and more durable at elevated temperatures than existing products. Our approach is based on low-cost sol-gel techniques and will be suitable for up-scaling to industrial production.

Integrated Multifunctional Glazing for Dynamical Daylighting

Funding: Swiss Federal Office of Energy (SFOE)

Duration: 2009-2012

The project is aiming to set the bases for an integrated multi-functional glazing for dynamic daylighting using novel microstructures which will redirect sunlight into office rooms.

Unique and Innovative Solution for Building Integration of Thin Film Silicon PV modules

ARCHINSOLAR

Funding: SwissElectric Research, Swiss Federal Office of Energy (SFOE), Competence Center Energy and Mobility CCEM-CH, Services Industriels de Genève

Duration: 2009-2012

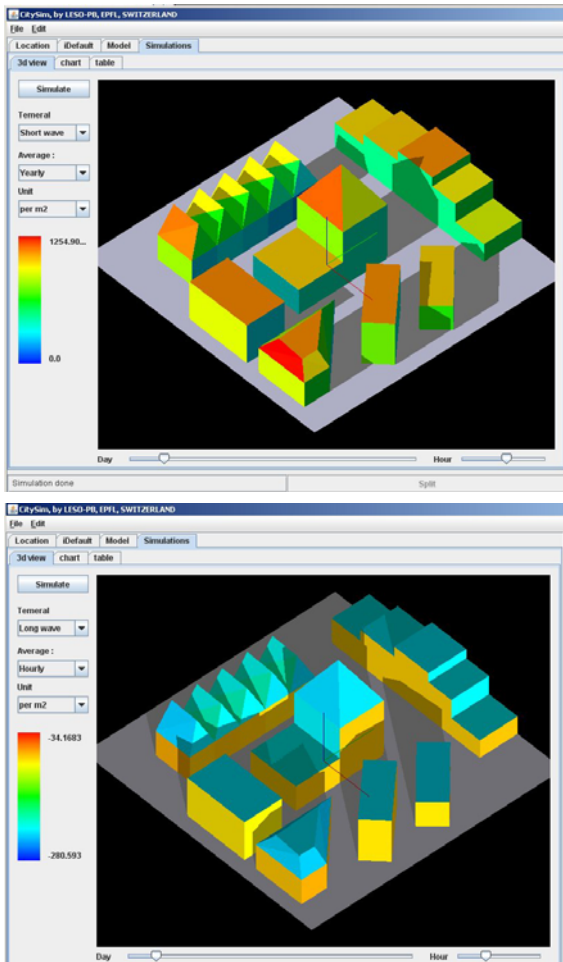
The Archinsolar project aims at the development of a new generation of photovoltaic elements based on thin film silicon technology (single amorphous and tandem amorph/microcrystalline cells). These new elements will be ultra-reliable. They will make possible very low manufacturing costs and unique architectural integration, and be respectful of the environment, landscape, buildings and traditions.

COMPUTER MODELLING OF COMPLEX SYSTEMS

Group leaders: Dr Darren Robinson

Postdoctoral researchers: Dr Jérôme Kaempf

PhD student: Urs Wilke



City Sim Model

By itself, building physics is concerned with rather elementary physics laws. But the construction, operation and demolition of a building are connected with many different aspects, and their interactions makes the complete system complex. The complexity is even increased when dealing with a whole district or a city instead of only one building.

This research domain includes two different aspects:

- modelling of building behaviour where non-deterministic aspects must be considered, such as user behaviour (occupancy, individual preferences relative to comfort, etc) or the stochastic nature of weather conditions;
- modelling of large groups of elementary buildings, where the complexity arises from the numerous interactions between the individual objects (buildings).

This domain is closely linked with the domain Sustainable Urban Development: notably, both domains cover the study of similar objects (urban districts or a whole city), and they are concerned with the modelling of similar phenomena (ecosystemic modelling, interaction with the environment).

Published work relates to

- Urban sustainable planning tools with 3D models (Suntool)

Activities 2010

Activities in 2010 were carried out of the frame work of a SNSF project dedicated to urban energy flow modelling involving the use of multi-agent modelling tools.

Current Projects

An Investigation of Strategies leading to a 2000W City using Bottom-up Models of Urban Energy Flows

Funding: Swiss National Science Foundation (SNSF)

Duration: 2009-2012

In this project we will develop a detailed spatially explicit model of the dynamic flows of energy and matter within a city due to transportation, the operation of buildings and the activities accommodated by them. This will involve the further development and integration of CitySim -- the most fully developed model available for explicit simulation of building-related energy flows in urban settlements --and MATSIM --a detailed transport micro-simulation model. The resulting platform should allow the simulation of all key physical urban resource flows. Once integrated, calibrated and validated, it will be applied to the city of Zürich to produce new guidance for its development up until 2050, with a view to achieving a 2000W/capita city.

EDUCATION AND TEACHING

COURSES AND STUDENT NUMBERS 2009/2010

Bachelor/Master Programmes

Course title	Lecturer	Students	Students numbers
Building Physics I	Prof. J.-L. Scartezzini	AR BA SEM1	330
Building Physics II	Dr A. Schueler	AR BA SEM2	320
Building Physics III	MER Dr Robinson	AR BA SEM3	141
Building Physics IV	Prof. J.-L. Scartezzini	AR BA SEM4	125
Building Physics V	Prof. J.-L. Scartezzini	AR BA SEM5	105
Building Physics VI	Prof. J.-L. Scartezzini	AR BA SEM6	105
Indoor Environment Quality	Prof. C.-A. Roulet	AR MA SEM1	82
Energy within Buildings	Dr N. Morel MER Dr E. Gnansounou	GC MA SEM1+3	60
Sustainable Urban Development, Infrastructures	Prof. J.-L. Scartezzini MER Dr D. Robinson	AR/GC/SIE BA SEM6 (ENAC Learning Units)	18
Building Integration of Renewable Energy	MSc C. Roecker Dr M.C. Munari Probst	AR/GC BA SEM6 (ENAC Learning Units)	16
Energy in the City	MER Dr D. Robinson MER Dr E. Gnansounou	AR/GC/SIE BA SEM4 (ENAC Weeks)	20
Monitoring within ENAC	Dr N. Morel	AR/GC/SIE BA SEM4 (ENAC Weeks)	20
Light and the Built Environment: Impact on Circadian Rhythms in Human	Dr M. Münch	EPFL PhD Students (Doctoral program Neuroscience)	10

PhD Projects

Title	Name	Advisers	End	# EPFL- Thesis
Urban districts' energy performance	O. Pol	MER Dr D. Robinson	2014	N/A
Multifunctional microstructured glazing for seasonal thermal control and daylighting	A. Kostro	Prof. J.-L. Scartezzini Dr A. Schueler	2014	N/A
Automatic control of electrochromic Windows	N. Zarkadis	Prof. J.-L. Scartezzini Dr N. Morel	2014	N/A
Optimization of daylight in educational buildings in prevailing clear sky conditions and its consequent influence on energy efficiency	C. Basurto Davilla	Prof. J.-L. Scartezzini Dr J. Kaempf	2014	N/A
Nano-structured Multilayer Coatings on Architectural Glazing for active Solar Energy Facades	S. Mertin	Prof. J.-L. Scartezzini Dr A. Schueler	2013	N/A
Building integrated Solar Energy Solutions for the Residential and Tertiary Sector	R. Peres Gagliano	Prof. J.-L. Scartezzini Dr M.C. Munari Probst	2013	N/A
Thermochromic VO ₂ Films for "Smart" Solar Energy Applications	A. Paone	Prof. J.-L. Scartezzini Dr A. Schueler	2013	N/A
A Bottom-up Model of City Metabolism	U. Wilke	MER Dr D. Robinson Dr F. Haldi	2013	N/A
The impact of Light on Comfort including Non-Image-Forming Effects	A. Borisuit	Prof. J.-L. Scartezzini Dr M. Münch	2013	N/A
Urban resource Flow Modelling: from the Neighbourhood to the City	D. Perez	MER Dr D. Robinson Dr J. Kaempf	2013	N/A
Heat and Corrosion resistant Nano-composite selective Solar Absorber Coatings by Sol-Gel Processing	M. Joly	Prof. J.-L. Scartezzini Dr A. Schueler	2012	N/A
On the Adaptation of Building Controls to the Envelope and the Occupants	D. Daum	Prof. J.-L. Scartezzini Dr N. Morel	2010	4935
Energeti, Visual and Non-Visual Aspects of Office Lighting	F. Linhart	Prof. J.-L. Scartezzini	2010	4634
Optimisation of Urban Form by the Evaluation of Solar Potential	M. Montavon	Prof. J.-L. Scartezzini	2010	4657
Towards a unified Model of Occupants' Behaviour and Comfort for Building Energy Simulation	F. Haldi	MER Dr D. Robinson	2010	4587

PhD External Committees

Title	Name	University	Adviser	Year
Analyse de l'impact des propriétés radiatives de façades pour la performance énergétique de bâtiments d'un environnement urbain dense	M. Doya	Université de la Rochelle (F)	MER Dr D. Robinson	2010
Bâtiments résidentiels locatifs à haute performance énergétique: Objectifs et réalités	J.-M. Zraggen	Université de Genève	MER Dr D. Robinson	2010

Masters Projects

Title	Student/Institution	Year	Programme
Analyse de sensibilité de l'outil CitySim	Ch. Marguerite (Ecole des Mines de Nantes, France)	2010	MSc Sciences Techniques
Building Energy Analysis Programmes	A. Deconinck (KU Leuven, Belgium)	2010-2011	MEng Arch.
Standards Minergie dans les pays à climat tropical humide	F. Aabid (EPFL)	2010-2011	MSc Mech. Eng.
Application d'un logiciel de simulation de système urbain à un bâtiment de Martigny	C. Dorsaz (EPFL)	2010	MSc Mech. Eng.
Etude d'un quartier zurichois d'un point de vue énergétique à l'aide du logiciel CitySim	D. Besson (EPFL)	2010	MSc Mech. Eng.
Analysis of the Financial Cost, Environmental Effects and Quality of Swiss and Belgian Passive Houses	A.-S. Goudeseune (KU Leuven, Belgium)	2009-2010	MEng Arch.
Démolition-reconstruction de bâtiments de logement des années 1940/50. Le cas de la Cité Villars à Genève (co-tutelle: Prof L. Ortelli)	M. Zimmermann (EPFL)	2009-2010	MSc Arch.
Park Haus: un abri souverain pour une microville à basse consommation énergétique (Gudelfingen, Basel) (co-tutelle: Prof L. Ortelli)	E. Moresi (EPFL)	2009-2010	MSc Arch.

Outside Teaching

Title	Institution	Year	Programme
Physics of urban sustainability (3 days) - MER Dr D. Robinson	Ecole des Mines de Nantes (F)	2010	Post-Grad
Rhapsody in blue (1 day) – Dr M. Münch	University Hospital Geneva	2010	Post-Grad
Nanostructured inorganic thin films in solar energy conversion, Sol-gel coatings for solar thermal and photovoltaic application (10 days) Dr A. Schüler	The Abdus Salam International Centre for Theoretical Physics Trieste (I)	2010	Post-Grad

FOREIGN STUDENTS AND TRAINEES

LESO-PB Research Group	Student/Institution	Year	Programme
Nanostructured Inorganic thin Films for Solar Energy Conversion	M. Gonzalez (Univ. Sevilla Spain)	2010	Post-grad intern
Nanostructured Inorganic thin Films for Solar Energy Conversion	A. Kostro (IC EPFL)	2010	Post-grad intern
Nanostructured Inorganic thin Films for Solar Energy Conversion	Th. Gascou (Material Science EPFL)	2010	Post-grad intern
Nanostructured Inorganic thin Films for Solar Energy Conversion	M. Marending (Microtechnics EPFL)	2010	Civil Service
Nanostructured Inorganic thin Films for Solar Energy Conversion	M. Geiger (EPFL)	2010	Trainee
Nanostructured Inorganic thin Films for Solar Energy Conversion	Y. Antonetti (UAS Yverdon)	2010	Trainee
Building Integration of Renewable Energies	G. Stoll (Arch. EPFL)	2010	Civil Service
Building Integration of Renewable Energies	A. Giovanardi (EURAC, Italy)	2010	PhD
Sustainable Urban Development	J. Aniket (IIT Karagpur, India)	2010	Post-grad intern
Sustainable Urban Development	L. Dapeng (Univ. Changsha, China)	2010	PhD
Sustainable Urban Development	S. Wei (Loughborough University, UK)	2010	PhD
IT Support	J. Cepi	2010	Civil Service
IT Support	M. Grandjean (ETML)	2010	Trainee
IT Support	B. Carvalho (ETML)	2010	Trainee

PUBLICATIONS 2010

Details see <http://infoscience.epfl.ch>.

REFEREED SCIENTIFIC JOURNALS

Borisuit A., Scartezzini J.-L., Visual Discomfort and Glare Rating Assessment of Integrated Daylighting and Electric Lighting Systems using HDR Imaging Technique
In *Architectural Science Review*, Vol. 53, num. 4, p. 359-373 (2010)

Daum D., Morel N., Assessing the total energy impact of manual and optimized blind control in combination with different lighting schedules in a building simulation environment
In *Journal of Building Performance Simulation*, Vol. 3, num. 1, p. 1-16 (2010)

Daum D., Morel N., Identifying important state variables for a blind controller
In *Building & Environment*, Vol. 45, num. 4, p. 887-900 (2010)

Daum D., Haldi F., Morel N., A personalized measure of thermal comfort for building controls
In *Building & Environment*, Vol. 46, num. 1, p. 3-11 (2010)

Haldi F., Robinson D., On the unification of thermal perception and adaptive actions
In *Building and Environment*, 45(11) p. 2440-2457 (2010)

Haldi F., Robinson D., Adaptive actions on shading devices in response to local visual stimuli
In *Journal of Building Performance Simulation*, 3(2) p. 135-153 (2010)

Kämpf J., Wetter M., Robinson D., A comparison of global optimization algorithms with standard benchmark functions and real-world applications using EnergyPlus
In *Journal of Building Performance Simulation*, 3(2) p. 103-120 (2010)

Kämpf J., Montavon M., Bunyesc J., Bolliger R., Robinson D., Optimisation of buildings' daylight availability,
In *Solar Energy* 84(4) p. 596-603 (2010)

Kämpf J., Robinson D., Optimisation of building form for solar energy utilisation using constrained evolutionary algorithms
In *Energy and Buildings*, 42(6) p. 807-814 (2010)

Linhart F., Wittkopf S., Scartezzini J.-L., Performance of Anidolic Daylighting Systems in tropical climates Parametric studies for identification of main influencing factors
In *Solar Energy*, 84, p.1085-1094 (2010)

Linhart F., Scartezzini J.-L., Minimizing lighting power density in office rooms equipped with Anidolic Daylighting Systems
In *Solar Energy*, 84, p. 587-595 (2010)

Munari Probst M.C., Roecker C., I, Architectural integration of solar thermal systems
In *Detail Green*, Vol. 1 num. 10, p. 42-45 (2010)

Sundaram P., Wells W.M., Mulkern R.V., Bublick E.J., Bromfield E.B., Münch M., Orbach D.B., Fast human brain magnetic resonance responses associated with epileptiform spikes
In *Magnetic Resonance in Medicine*, Aug 30 (2010)

Refereed scientific journals 2010 [cont'd]

Münch M., Silva E.J., Ronda J.M., Czeisler C.A., Duffy J.F., EEG sleep spectra in older adults across all circadian phases during NREM sleep
In *Sleep* 2010, 33(3):389-401 (2010)

Scartezzini J.-L., CISBAT 2007 Editorial CISBAT 2007 Special Issue
In *Solar Energy*, 84, p. 513-515 (2010)

Thanachareonkit A., Scartezzini J.-L., Modelling Complex Fenestration Systems using physical and virtual models
In *Solar Energy*, 84, p. 563-586 (2010)

REFEREED SCIENTIFIC CONFERENCES

Farkas K, Horvat M. , Munari Probst M.C., Barriers and Needs for Building Integration of Solar Thermal and Photovoltaics
In *Proc. Eurosun, Graz*, 28 September – 1st October (2010)

Giovanardi A., Baggio P., Lollini R., Munari Probst M.C., Development of Solar Ventilated Façade System for Building Energy Retrofit
In *Proc. Eurosun, Graz*, 28 September – 1st October (2010)

Grobe L.O., Wittkopf S., Pandey A.R., Xiaoming Y., Seng A.K., Scartezzini J.-L., Selkowitz S., Singapore's Zero-Energy Building's daylight monitoring system
In *Proc. International Conference on Applied Energy, Singapore*, April 21-23 (2010)

Haldi F. Robinson D., Results from the monitoring of indoor environment and occupant perceived productivity in office buildings
In *Proc. Adapting to change: new thinking on comfort, Windsor UK*, April (2010)

Haldi F. Robinson D., On the unification of thermal perception and adaptive actions
In *Proc. Adapting to change: new thinking on comfort, Windsor UK*, April (2010)

Haldi F., Pröglhöf C., Mahdavi A., Robinson D., The double blind verification of a comprehensive window opening model
In *Proc. BauSim 2010, Vienna* (2010)

Haldi F., Robinson D., The impact of occupants' behaviour on urban energy demand,
In *Proc. BauSim 2010, Vienna* (2010)

Munari Probst M.C., Schüler A., Roecker C., Bringing colours to solar collectors: a contribution to an increased building integrability
In *Proc. Colour & Light in Architecture, Venice*, 11-12 November (2010)

Pandey A.R., Wittkopf S., Huang Y., Lynn N., Ang K.S., Prasad D., Scartezzini J.-L., Building Integrated Photovoltaic of Singapore's Zero Energy Building
In *Proc. International Conference on Applied Energy, Singapore*, April 21-23 (2010)

Refereed scientific conferences 2010 [cont'd]

Kämpf J., Robinson, D. Optimisation of solar energy utilisation potential in the urban context
In *Proc. SEUS: Solar Energy at Urban Scale*, Compiègne, France, 25-26 May (2010)

Sundaram P., Wells W.M., Mulkern R.V., Bubrick E.J., Bromfield E.J., Münch M., Orbach D., Magnetic Resonance Imaging of Cerebral Electromagnetic Activity in Epilepsy.
In *Proc. Conference of the International Society for Magnetic Resonance in Medicine (ISMRM)*, May (2010)

Robinson, D., Solar radiation modelling for urban environments,
In *Proc. SEUS: Solar Energy at Urban Scale*, Compiègne, France, 25-26 May (2010)

REFEREED SCIENTIFIC CONFERENCES ABSTRACTS

Münch M., Scheuermaier K.D., Zhang R., Guzik A., Silva E.J., Ronda J.M., Duffy J.F., Evening exposure to polychromatic white and blue-enriched light: Effects on the sleep and wake EEG in healthy older adults. *Joint meeting of the Swiss Society for Neuroscience and the Swiss Society for Sleep Research, Sleep Medicine and Chronobiology (SSSSC)*, Lausanne, March (2010)

Borisuit A., Linhart F., Scartezini J.-L., Münch M., Effects of two different office lighting conditions on subjective alertness and visual comfort in young subjects. *Joint meeting of the Swiss Society for Neuroscience and the Swiss Society for Sleep Research, Sleep Medicine and Chronobiology (SSSSC)*, Lausanne, March (2010)

Dunne S.P., Santhi N., Scheuermaier K., Münch M.Y., Duffy J.F., Comparison of responses on two subjective sleepiness scales in young and older subjects. *Associated Professional Sleep Societies (APSS), The 24th Annual Meeting*, 2010 San Antonio (Texas, USA) *Sleep*, 33 (Suppl) (2010)

Silva E.J., Cain S.W., Münch M.Y., Wang W., Ronda J.M., Czeisler C.A., Duffy J.F., Recovery of neurobehavioral function in a group of young adults following chronic sleep restriction. *Associated Professional Sleep Societies (APSS)*

The 24th Annual Meeting, 2010 San Antonio (Texas, USA) *Sleep*, 33 (Suppl.): A 103 (2010)

Cain S.W., Silva E.J., Münch M.Y., Czeisler C.A., Duffy J.F., Chronic sleep restriction impairs reaction time performance more in young than in older subjects. *Associated Professional Sleep Societies (APSS), The 24th Annual Meeting*, 2010 San Antonio (Texas, USA).) *Sleep*33 (Suppl): A85 (2010)

Münch M., Scheuermaier K.D., Zhang R., Guzik A., Silva E.J., Ronda J.M., Duffy J.F., Evening exposure to polychromatic white and blue-enriched light: Effects on the sleep and wake EEG in healthy older adults. *Somnologie, Deutsche Gesellschaft für Schlafforschung und Schlafmedizin*, (Suppl): p 6-7, Oktober (2010)

Münch M., Ueberblick dynamische Beleuchtung – Chronobiologische Beurteilung der Beleuchtungssituation
In *Bulletin – Fachzeitschrift und Verbandsinformationen von Electrosuisse*, p. 32-36 (2010)

PHD THESES

Daum D., On the Adaptation of Building Controls to the Envelope and the Occupants
PhD Thesis EPFL, Nr 4935 (2010)

Haldi F., Towards a Unified Model of Occupants' Behaviour and Comfort for Building Energy Simulation
PhD Thesis EPFL, Nr 4587 (2010)

Montavon M., Optimisation of Urban Form by the Evaluation of the Solar Potential
PhD Thesis EPFL, Nr 4657 (2010)

Linhart F., Energetic, Visual and Non-Visual Aspects of Office Lighting
PhD Thesis EPFL, Nr 4634 (2010)

INVITED PRESENTATIONS

Scartezzini J.-L. and M. Münch, Light beyond vision : Day and night in building science and chronobiology
Keynote Speakers, SwissNex San Francisco (USA), 16 February 2010

Scartezzini J.-L., A Day to day experience in Solar Energy (in French),
Invited Speaker, Energissima, Fribourg, 13-16 April 2010

Scartezzini J.-L. and Schüler A., SwissINSO – LESO-PB/EPFL : A partnership for TechTransfer
Invited Speakers, SwissINSO Openhouse at EPFL, Lausanne, 22 April 2010

Scartezzini J.-L., Energy and thermal comfort aspects of concrete (in French)
Invited Speaker, Colloque Béton 2010, Rolex Learning Centre, Lausanne, 3rd June 2010

Scartezzini J.-L., Green City: Symbiosis of NegaWatts and MegaWatts (in French)
Invited Speaker, Siemens Accents 2010, Aigle, 1st July 2010

Scartezzini J.-L., Sustainable Buildings: from Nano to Urban scale
Keynote Speaker, Swiss-Corean Science Days, Seoul (Korea), 9-10 September 2010

Scartezzini J.-L., The Sun Architecture (in French)
Invited Speaker, 90. Anniversary of Ernst Schweizer AG, Rolex Learning Centre, Lausanne
9 November 2010

Edelman M., Le Wizard de LESOSAI 7.0
Invited Speaker, LESO Lunchtime Lectures, Lausanne, EPFL, September 2010

Kämpf J. and Robinson D., Optimisation of solar energy utilisation potential in the urban context
Invited Speakers, SEUS – Solar Energy at Urban Scale, Compiègne (F), 25-26 May 2010

Morel N., Energy's Future is 100% Renewable – Evolution and Potential
Invited Speaker, Rencontres suisses de l'électricité, Lausanne, March 2010

Munari Probst M.C., Architectural integration of active solar systems
Invited Speaker, Solar Meetings 2010, Institut National pour l'Energie Solaire (INES), Savoie
Technolac (F), 7-18 November 2010

Munari M.C., Designing solar systems as multifunctional construction elements for building integration,
Invited Speaker, Creative Workshop Smart solar systems for building integration, EDF Renardières,
Moret-sur-Loing (F), 26-27 May 2010

Munari Probst M.C., Architectural integration of active solar technologies
Invited Speaker, Conference Progettazione integrate e Architettura Solare, EURAC Research Institute,
Bolzano (I), 19 March 2010

Munari Probst M.C. and Roecker C., Photovoltaic vs. Solar Thermal: very different building integration
possibilities and constraints, Invited Speaker, Workshop BiSol, IEA Task 41, Opportunités de collaboration
entre le secteur bâtiment et du Solaire, Trübbach, 1-2 February 2010

Munari Probst M.C., La méthode LESO-QSV Invited Speaker, LESO Lunchtime Lectures, Lausanne, EPFL, -8
October 2010

Munari Probst M.C., Acceptabilité des systèmes solaires intégrés aux bâtiments: L'approche LESO-QS, Invited Lecturer, Seminar for Section Monuments et Sites, Patrimoine et Logistique (SIPAL), Etat de Vaud, 12 October 2010

Munari Probst M.C., Acceptabilité des systèmes solaires intégrés aux bâtiments: L'approche LESO-QSV, Invited Lecturer, Seminar Planification énergétique territoriale, enjeux pour les collectivités locales, CREM and EPFL Energy Center, 8 September 2010

Robinson D., Modelling occupants' activities and their use of appliances, Invited Speaker, Institut National Polytechnique de Grenoble, France, October 2010

Robinson D., Computer modelling for more sustainable urban design
Invited Speaker, Simurex Workshop, Corsica, France, April 2010

Robinson D., Urban energy modelling, Young Cities workshop
Invited Speaker, Technical University of Berlin, Germany, February 2010

Schüler A., Nanostructured inorganic thin films in solar energy conversion, Part I: Vacuum deposited selective absorber coatings, Keynote lecturer, Winter College on Optics and Energy, The Abdus Salam International Centre for Theoretical Physics, Trieste, February 8-19 2010

Schüler A., Nanostructured inorganic thin films in solar energy conversion, Part II: Sol-gel coatings for solar thermal and photovoltaic applications, Keynote lecturer, Winter College on Optics and Energy The Abdus Salam International Centre for Theoretical Physics, Trieste, February 8-19 2010

Schüler A., Innovatives Architekturglas für aktive Solarfassaden: Neue Möglichkeiten für gebäudeintegrierte Solarthermie und Photovoltaik, Invited Speaker, 3, Energie-Apéro des Energie-Clusters Schweiz, Bern, March 2nd 2010

Schüler A., Optical and electronic properties of carbon- and nitrogen- based nanostructured inorganic thin films, Keynote lecturer, International Conference on Metallurgical Coatings and Thin Films ICMCTF, San Diego, USA, 26-30 April 2010

Paone A. and Schüler A., Semiconductor-metal transition in vanadium dioxide based thin films: towards "smart" solar energy materials
Invited Speaker, From Solid State to BioPhysics V, Cavtat, Croatia, 12-19 June 2010

MEDIAS

Scartezzini J.-L.

Video broadcast (79 min), Light beyond vision, fora.tv, 16 February 2010

Scartezzini J.-L.

Video broadcast (4 min), EPFL-Daylight and Biorhythms, youtube.com, 10 February 2010

Scartezzini J.-L.

Interview: Les pionniers sont de retour, Le Temps, 18 February 2010

J.-L. Scartezzini

Video broadcast (20 min), Il giardino di Albert: Future EcoHome, Radiotelevisione Svizzera Italiana, 10 October 2010

J.-L. Scartezzini

Web promotion campaign, What is excellence Jean-Louis Scartezzini?, Bank Julius Bär, Zurich, 10 September 2010

J.-L. Scartezzini

Vive la Vie, Magazine (Webzine) des Services Industriels de Genève (SIG), Automne 2010

J.-L. Scartezzini

Radio broadcast, (11 min), Le concept "Zero emission" de l'ETHZ, InterCités, 6 December 2010

Münch M.

Video broadcast (5 min), Down with fluorescent! Daylight benefits entire office, youtube.com, 23 February 2010

Münch M.

Zeitgeber Licht, Tec21, 47 (2010)

Münch M.

Erleuchtung im Klassenzimmer, NZZ am Sonntag, 21 November (2010)

LECTURES

LESO LUNCHTIME LECTURES

Title	Lecturer	Date
Can light make us bright? Effects of light on alertness and cognition	Prof. Christian Cajochen, University Clinic, University of Basel	03.12.2010
Art 18a LAT et acceptabilité des systèmes solaires actifs: l'approche LESO-QSV	Dr Maria Cristina Munari Probst, LESO-PB, EPFL	08.10.2010
Le "Wizard" de LESOSAI 7.0: Un nouveau concept orienté architectes	Marja Edelman, LESO-PB, EPFL	03.09.2010
Different aspects of daylight in the interior space	Maierova Lenka, Czech Technical University in Prague, Czech Republik	11.06.2010
Modelling of terrain induced turbulence for aviation safety	Prof. Kay W. Axhausen, Transport Planning, ETHZ	07.05.2010
Thermochromic and gasochromic films of VO ₂ for smart solar energy applications	Antonio Paone, LESO-PB, EPFL	16.04.2010
L'écologie industrielle, avenir du système industriel	Théodore Besson, University of Lausanne	12.03.2010

REPRESENTATION

EPFL INTERNAL

Name	Function, Organisation	Start	End
Prof. J.-L. Scartezzini	Associate Professor (TTAP Sustainable Building Technology), Member of Search Committee	2009	2010
Prof. J.-L. Scartezzini	Member of ENAC Academic Promotion Committee	2009	-
Prof. J.-L. Scartezzini	Chairman of CISBAT 2009 Editorial Committee	2009	2011
Prof. J.-L. Scartezzini	Member of Working Group on Excellence in Doctoral Education	2008	-
Prof. J.-L. Scartezzini	EPFL Doctoral Programme in Energy (EDEY); Member of Doctoral Committee	2010	-
Prof. J.-L. Scartezzini	Member of CISBAT 2009 Scientific Committee	2009	2011
MER Dr D. Robinson	Member of CISBAT 2009 Scientific Committee	2009	2011
MER Dr D. Robinson	ENAC Faculty Council	2008	2010
MER Dr D. Robinson	Co-director of Master of Advanced Studies Architecture and Sustainable Development (co-organized with University of Toulouse (France))	2004	2010
Dr. A. Schueler	Member of CISBAT 2009 Scientific Committee	2009	2011
Dr N. Morel	Member of CISBAT 2009 Scientific Committee	2009	2011
Dr N. Morel	ENAC Faculty Council	2006	2010
P. Loesch	ENAC Faculty Council	2006	2010
C. Roecker	Member of CISBAT 2009 Scientific Committee	2009	2011
C. Roecker	Member of ESOPP Scientific and Steering Committees	2009	2011

EPFL EXTERNAL

Name	Organisation, Function	Start	End
Prof. J.-L. Scartezzini	Novatlantis Platform, ETH-Board Evaluation (Bern), Member of Experts Panel	2010	2011
Prof. J.-L. Scartezzini	European Centre and Laboratories for Energy Efficiency Research (ECLEER), Member of Advisory Board	2009	-
Prof. J.-L. Scartezzini	International Journal of Photoenergy, Member of Editorial Advisory Board	2010	-
Prof. J.-L. Scartezzini	The Open Construction & Building Technology Journal , Member of Editorial Advisory Board	2009	-
Prof. J.-L. Scartezzini	Journal of Building Physics, Associate Editor	2009	-
Prof. J.-L. Scartezzini	IPCC Working Group III – Mitigation, Scoping Meeting for Renewable Energy, Expert Reviewer	2008	2010
Prof. J.-L. Scartezzini	World Economic Forum (WEF), Global Agenda Council on Sustainable Energy, Member of Experts Panel	2008	2010
Prof. J.-L. Scartezzini	Qatar National Research Fund (QNRF), National Priorities Research Program (NRRP), Peer Reviewer	2007	-
Prof. J.-L. Scartezzini	SIA Regards 2011 – National award for sustainable and promising achievements, Swiss Society for Engineers and Architects (SIA), Zurich, Member of Jury Panel	2010	2011
Prof. J.-L. Scartezzini	Swiss Competence Centre for Energy and Mobility (CCEM-CH), Research Committee Chair	2005	-
Prof. J.-L. Scartezzini	International Council for Research and Innovation in Building and Construction, EPFL Representative	2004	-

REPRESENTATION EPFL EXTERNAL (cont'd)

Prof. J.-L. Scartezzini	European Renewable Energy Research Centres Agency (EUREC), College of Members, EPFL Representative	2004	-
MER Dr D. Robinson	Building and Urban Simulation, Conference Session Chair	2010	2010
MER Dr D. Robinson	Solar Energy at Urban Scale (Compiègne, France), Conference Session Chair	2010	2010
MER Dr D. Robinson	Competition Juries Metamorphose Project, Expert Evaluation Committee	2010	2010
MER Dr D. Robinson	Research Program UrbanNet, Swedish Research Council, Member of Evaluation Committee	2010	2011
MER Dr D. Robinson	Journal of Building Performance Simulation, Editorial Board Member	2009	-
MER Dr D. Robinson	On-line journal Sustainability, Editorial Board Member	2009	2011
MER Dr D. Robinson	National Science Foundation of Portugal programme Architecture and Urban Studies, Member of Evaluation Committee	2009	-
MER Dr D. Robinson	EcoParc, Neuchâtel, Board Member	2009	2010
MER Dr D. Robinson	e-sim (IBPSA-Canada) national conference, 2010, Scientific Committee Member	2009	2010
MER Dr D. Robinson	SB10, Sustainable Building Conference, Scientific Committee Member	2009	2010
MER Dr D. Robinson	French national research agency (ANR) programme "Villes Durables", Member of Evaluation Committee	2006	2010
MER Dr D. Robinson	Swiss Chapter of Int. Building Performance Simulation Association: IBPSA-CH, Founding Board Member	2006	2011
C. Roecker	National Competence Centre for Energy and Mobility (CCEM-CH), House 2000, Member of Steering Committee	2007	2010
C. Roecker	IEA Task 41 Solar Energy and Architecture, Subtask A co-leader	2009	2012
Dr M.C. Munari Probst	IEA Task 41 Solar Energy and Architecture, Subtask A co-leader	2009	2012
Dr M.C. Munari Probst	Swissolar Association (Bern), Member of Architecture Group	2010	-
Dr M.C. Munari Probst	Colour & Light in Architecture (Venice), Session Conference Chair	2010	2010
Dr M.C. Munari Probst	Conference Eurosun (Graz), Session Conference Chair	2010	2010

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