Dr Nikos ZARKADIS
Professor hepia // HES-SO Genève
Energy and Environmental Eng. MSc PhD

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CURRICULUM VITAE

EDUCATION

2010 – 2015 **PhD: Ecole Polytechnique Fédérale de Lausanne,** Doctoral Program in Civil and Environmental Engineering, Solar Energy & Building Physics Laboratory (LESO-PB)

Thesis: Novel models for predictive control of advanced building systems and occupant comfort in buildings. (Thesis no. 6440, EPFL, 2015).

2004 – 2008 **MSc: University of Crete, Department of Chemistry**

M.Sc. in Environmental Protection Technologies

Dissertation: Towards A Methodology For An Integrated Assessment & Labelling For Sustainable Buildings In The EU.

1998 – 2003 **BSc: Technological Educational Institute of Crete (TEI of Crete), Department of Mechanical Engineering**

B.Sc. Degree in Energy and Environmental Technology

Dissertation: Energy and Environmental Assessment of Hospitals. The 'General University Hospital Of Heraklion' case study.

MAIN TEACHING, RESEARCH & PROFESSIONAL EXPERIENCE

2016, August **International Summer School in Renewable Energy, Shawinigan, Canada**

Engaged to teach the module "Architectural challenges of energy retrofits in buildings" (in French) and represent HEPIA at the summer school's activities.

2015 – **Hepia // HES-SO Genève: Filière Technique des bâtiments**

Professor in the domain of energy performance of buildings (building physics and systems, occupants thermal comfort, energy audits, energy performance simulation and improvement) and energy concepts in general (energy, exergy, fossil and renewable energy sources). Classes (in French): "Performances énergétiques des bâtiments I & II" and "Problématique de l'énergie". Supervision of students during their bachelor thesis.

2010 – 2015 **Ecole Polytechnique Fédérale de Lausanne / Solar Energy & Building Physics Laboratory**

Doctoral research in the fields of predictive building control, building physics, occupants visual and thermal comfort, energy saving (Green-Mod & ECControl projects). Teaching assistant in Building Physics I & II courses (Head of assistants between 2012-14).

2004 – 2010 **Applied Industrial Technologies Ltd**

Independent contractor, researcher & technical consultant in the areas of: IT development, sustainable development and accessibility of the built environment, energy & environmental engineering, social economy and "tourism for all". Contracted to participate in several projects undertaken by the company.

2002 – 2006 **Tsapalis Antonis Mech.Eng. Office**

Environmental Impact Assessor and Mech. Engineer & designer in building construction. Participated in small, medium and large scale private and public sector project assignments (i.e. University of Crete Campus Expansion, New Museum Of Natural History in Crete). Practical trainee for the first 6 months and then employed on a full-time basis.

1999 – 2001 **Wind Energy Lab (TEI of Crete)**

Undergraduate researcher. Participated in several projects and R&D programmes undertaken by the laboratory in the fields of: maps digitizing and management; wind energy potential assessments; wind energy calculations and synthesis of wind systems; wind energy management using Reverse Hydroelectric power plants.

1997 – 1999 **Galanis Sports Data SA**

Employed on a part-time basis as a Sports Statistics Expert. Main duties included technical infrastructure setup and support; statistics generation, edit and publication; display of sport statistics live (on real time) on national and international TV broadcasting networks.

SELECTED PROJECTS

2017 – **Hepia climatic chamber & test cell,** Funding approved on April 2017 ("Crédit de renouvellement"). On May 2016 was appointed leader of an interdisciplinary working group within the school with the responsibility to draft the specifications of the project.

2012 – 2016 **Green-Mod**, A joint EPFL/HES-SO Fribourg project; funded by the Hasler Foundation. Elaboration of models able to optimize energy consumption in buildings while preserving human comfort. Use of state-based stochastic modelling (HMM) applied to temporal signals acquired from heterogeneous sources. Main achievements include the application of HMM: i) in a new approach in user & building-adapted control with the modelling of the "season" variable and ii) in a novel approach for the modelling of visual comfort inside buildings.

2010 – 2012 **ECControl, Automatic control of an electrochromic window,** OFEN, Switzerland. Development of a new advanced predictive control algorithm for an electrochromic (EC) glazing for the optimal use of the direct solar gains and the (visual and thermal) comfort of the users which addresses for the first time the slow reaction time of this type of advanced glazing. The algorithm was incorporated and tested extensively into an integrated building control scheme.

2009 – 2010 **PERFECTION: Coordination Action For Performance Indicators For Health, Comfort And Safety Of The Indoor Environment**, EU; 7th Framework Programme (FP7)

Contracted to participate in Wok Package 2: Development of IT framework for assessing the impact of Health, Comfort & Safety indicators on the indoor environment.

2005 – 2008 **The Social Economy in Greece. Framework, Pilot testing, and Support Structures**, EU & Greek Ministry of Employment And Social Affairs; EQUAL Initiative

Author of the 'Guide For The Creation And Operation Of Technology Aware Social Enterprises'. Designer and developer of the web based software for the Social Economy Observatory in Greece. Participated in elaboration of business plans of social economy pilot companies.

2006 – 2007 **LEnSE: Methodology Development towards a Label for Environmental, Social and Economic Buildings,** EU; 6th Framework Programme (FP6)

Contracted to participate in WP1, 2 & 3. Participated in research for the definition and development of sustainability indicators and methodology framework for assessing the sustainability of buildings. Responsible for the development of the prototype assessment tool and the pilot testing of the methodology (task leader). Participation and presentations in national and international meetings and events (Expert Workshops & Project Meetings).

PAPERS, ARTICLES & CONFERENCES

N. Zarkadis. Smart windows / Smart algorithms for improved visual comfort and energy savings in buildings. Smart Living Lunch, Blue Hall. Fribourg, February 2, 2016.

Zarkadis, N. Une nouvelle approche pour l'estimation de confort visuel des occupants dans les bâtiments. Bâtiment du futur : quelques pistes pour répondre aux défis énergétiques, 26 novembre 2015, Centre « Pôle Énergie Bâtiment », Les Acacias (Genève).

A. Ridi, M. Zarkadis, C. Gisler, J. Hennebert. Duration Models for Activity Recognition and Prediction in Buildings using Hidden Markov Models. IEEE International Conference on Data Science and Advanced Analytics (DSAA), 2015.

N. Zarkadis, N. Morel, J-L. Scartezzini. Season Identification for Building Control Systems Based on Hidden Markov Models. (In preparation; provisional title).

N. Zarkadis, N. Morel, J-L. Scartezzini. A novel occupant-adapted and fuzzy logic-ready visual comfort modelling approach using machine learning algorithms. CISBAT 2015 International Conference, Lausanne, Switzerland, September 9-11th, 2015, p. 419-424.

N. Zarkadis, A. Ridi, N. Morel. A Multi-sensor Office-building Database for Experimental Validation and Advanced Control Algorithm Development, Procedia Computer Science, Volume 32, 2014, Pages 1003-1009, ISSN 1877-0509 (Presented at The 5th International Conference on Ambient Systems, Networks and Technologies, ICT-SB Workshop, June 2 - 5, 2014, Hasselt, Belgium)

A. Ridi, N. Zarkadis, G. Bovet, N. Morel and J. Hennebert. Towards Reliable Stochastic Data-Driven Models Applied to the Energy Saving in Buildings. CISBAT 2013, Lausanne, Switzerland, September 4-6, 2013.

N. Zarkadis and N. Morel. Advanced Control of Electrochromic Windows. CISBAT 2013, Lausanne, Switzerland, September 4-6, 2013.

N. Zarkadis, N. Sakkas, E. T. Samara. 1st SE Europe-Mediterranean Conference on Accessibility and Tourism: An Overview, ABACUS 2007 (Vol.2 No.2)

N. Zarkadis. Labeling For Sustainable Buildings – The LEnSE Project, Innovative policies and Technologies For The Built Environment, Technical Chamber of Greece Workshop (Eastern Crete Department), 22 June 2006

ACADEMIC AWARDS & HONOURS

- Scholarship from REVOIL S.A. (Greek petroleum company) (June 2008) for best M.Sc. thesis in Environmental studies
- Scholarship from "Greek State Scholarships Foundation" (February 2006) for excellency in M.Sc. Programme courses
- Scholarships (Excellence Awards) from "Greek State Scholarships Foundation" for 2 consecutive academic years (1998-1999 & 1999-2000) [B.Sc. courses excellency]

LANGUAGES

- Greek (mother tongue), English (excellent; Proficiency In English from Cambridge University), French (Very good), Italian (beginner).

GENERAL INTERESTS & EXTRA-PROFESSIONAL ACTIVITIES

- Producer and presenter of a 4-hour weekly radio show in university radio station (Studio FM1 105.4 MHz, http://fm1.teiher.gr) between 1999 and 2008. The show featured a wide range of music principally from 50s to 70s (Rock, pop, jazz, blues, folk, soul etc.). It continued in Lausanne, at *Fréquence Banane*, Sundays 20h-22h (http://vitaminzradio.wordpress.com/).
- Volleyball (middle hitter) in Panionios G.S.S. (3rd National League, Greece) between 1993 and 1998; since 2010 in VBC Preverenges (Gold medal 2017 in Cantonal mixed-gender championship; 5th place 2017 in Swiss finals).
- Volunteer at Montreux Jazz Festival since 2010.