UPPSALA UNIVERSITET

Department of Civil and Industrial Engineering
Division of Civil Engineering and Built Environment
Joakim Widén
2024-05-23

Curriculum Vitae

Personal and contact information

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Education

2006–2010	Ph.D. student in Engineering Physics, Department of Engineering Sciences, Uppsala University.
2005–2006	Environmental and developmental studies, Cemus, Uppsala University.
2000–2005	Master of Science Programme in Sociotechnical Systems Engineering (STS), Uppsala University. Double specialization in systems theory and biological systems.

Academic degrees and titles

Dec 1, 2018	Professor in Civil Engineering.
Nov 24, 2015	Associate Professor (docent) in Engineering Physics.
Dec 14, 2010	Doctor of Philosophy (Ph.D.) in Engineering Physics. Supervisor: Prof. Ewa Wäckelgård. Title of the thesis: *System Studies and Simulations of Distributed Photovoltaics in Sweden*.

Jul 30, 2009	Licentiate of Technology (Tech. Lic.)
Jun 15, 2005	Master of Science (M.Sc.)

Employment

Dec 2018 –	Professor (Chair) in Civil Engineering, Department of Civil and Industrial Engineering, Uppsala University.
May 2015 – Nov 2018	Senior Lecturer in Engineering Physics with specialization in built environment energy systems, Department of Engineering Sciences, Uppsala University.
May 2011 – Apr 2015	Postdoctoral Research Fellow, Department of Engineering Sciences, Uppsala University.
Sep 2011 – Dec 2011	Part-time (20%) employed at ABB Corporate Research, Västerås.
Jan 2011 – Apr 2011	Researcher, Department of Engineering Sciences, Uppsala university.
Mar 2006 – Dec 2010	Ph.D. student, Department of Engineering Sciences, Uppsala University.

Research visits

Nov 2007	Guest researcher at the Department of Advanced Energy Systems at Helsinki University of Technology (now Aalto University), Finland.

Awards

2018	*Swedish Solar Energy Award* for exceptional contribution to the development of solar energy in Sweden, awarded by the Solar Energy Association of Sweden.
2012	Received *Bjurzons Premium*, awarded by the Faculty of Science and Technology, Uppsala University, for outstanding Ph.D. thesis.
2009	1st prize winner of *Prix franco-suedois de l'excellence scientifique*, awarded by the French-Swedish Research Association (ASFR) and the French embassy in Sweden.

Supervision of Ph.D. students

Sin-Yi Li, Uppsala University, co-supervisor 2023–

Henry Korb, Uppsala University, co-supervisor 2021–

Lukas Dahlström, Uppsala University, principal supervisor 2021–

Puneet Kumar Saini, Uppsala University / Dalarna University, principal supervisor 2019–2023. Ph.D. thesis: *Solar integrated heating systems: Applications in buildings and industries*, 2023.

Samer Quintana, Uppsala University / Dalarna University, principal supervisor 2019–

Umar Hanif Ramadhani, Uppsala University, principal supervisor 2018–2023. Ph.D. thesis: *Uncertainty modeling for load flow and hosting capacity analysis of urban electricity distribution systems*, 2023.

Fatima Johari, Uppsala University, principal supervisor 2018–2023. Ph.D. thesis: *Urban Building Energy Modeling for Retrofit Scenarios: Development, Calibration, Validation and Implementation for Swedish Residential Buildings*, 2023

Reza Fachrizal, Uppsala University, co-supervisor 2018–2023. Ph.D. thesis: *Synergy between Photovoltaic Power Generation and Electric Vehicle Charging in Urban Energy Systems: Optimization Models for Smart Charging and Vehicle-to-Grid*, 2023.

Svante Monie, Uppsala University, principal supervisor 2017–2018, co-supervisor 2018–2022. Ph.D. thesis: *Balancing variable renewable electricity generation using combined heat and power plants, large-scale heat pumps, and thermal energy storages in Swedish district heating systems*, 2022.

Dennis van der Meer, Uppsala University, principal supervisor 2016–2021. Ph.D. thesis: *Spatio-temporal forecasting and optimization for integration of solar energy in urban energy systems*, 2021.

Mahmoud Shepero, Uppsala University, co-supervisor 2016–2020. Ph.D. thesis: *Modeling and Forecasting of Electric Vehicle Charging, Solar Power Production, and Residential Load: Perspectives into the Future Urban and Rural Energy Systems*, 2020.

Emmanouil Psimopoulos, Uppsala University / Dalarna University, principal supervisor 2015–

Rasmus Luthander, Uppsala University, principal supervisor 2014–2018. Ph.D. thesis: *Self-Consumption of Photovoltaic Electricity in Residential Buildings*, 2018.

David Lingfors, Uppsala University, principal supervisor 2013–2017. Ph.D. thesis: *Solar Variability Assessment in the Built Environment: Model Development and Application to Grid Integration*, 2017.

Joakim Munkhammar, Uppsala University, principal supervisor 2012–2015, co-supervisor 2010–2012. Ph.D. thesis: *Distributed Photovoltaics, Household Electricity Use and Electric Vehicle Charging: Mathematical Modeling and Case Studies*, 2015.

Pia Grahn, KTH, co-supervisor 2014. Ph.D. thesis: *Electric Vehicle Charging Modeling*, 2014.

Mattias Hellgren, Linköping University, co-supervisor 2012–2015. Ph.D. thesis: *Energy Use as a Consequence of Everyday Life*, 2015.

Magnus Åberg, Uppsala University, co-supervisor 2011–2014. Ph.D. thesis: *System Effects of Improved Energy Efficiency in Swedish District-Heated Buildings*, 2014.

Summary of bibliometrical data

161 publications (including 74 peer-reviewed journal papers, 58 conference papers, 1 book, 3 book chapters and 18 technical reports).

h-index: 39 (Scopus), 47 (Google Scholar).

Citations: 6021 citations (Scopus), 9872 (Google Scholar).

For a complete publication list, visit: http://katalog.uu.se/empinfo/?id=N4-1373

Received grants

Dig-IT Lab Sustainable Industry, Vinnova, 2023. Co-applicant. Main applicant: Jonas Anund Vogel, KTH. The project received a grant of 34 750 000 SEK.

Digital tvilling för hållbar kravställning och uppföljning av byggnaders användning, funktion och prestanda, Vinnova, 2023. Main applicant. The project received a grant of 1 840 490 SEK.

Simulerings- och optimeringsbaserad analys för att stödja utformning av byggnader med nettonollenergibalans över livscykeln, Energimyndigheten, 2022. Co-applicant. Main applicant: Farshid Shadram, Uppsala University. The project received a grant of 3 497 656 SEK.

Solelforskningscentrum Sverige (SOLVE), Energimyndigheten, 2021. Co-applicant. Main applicant: Marika Edoff, Uppsala University. The project received a grant of 36 500 000 SEK.

Virtuell testbädd för strategisk stads- och energiplanering genom integrerade digitala modeller, Formas Smart Built Environment, 2021. Main applicant. The project received a grant of 2 224 974 SEK.

Gotland's sustainable energy system transition: resources, demand and planning, Uppsala University Multidisciplinary Graduate School in Sustainable Development, 2020. One out of three main applicants. The project received a grant of 2 400 000 SEK.

Lokal energilagring eller traditionella nätförstärkningar?, SamspEL, Energimyndigheten, 2018. Co-applicant. Main applicant: Anna Wolf, Power Circle. The project received a grant of 1 485 000 SEK.

Prognostisering för styrning av lokalt batterilager, SamspEL, Energimyndigheten, 2018. Co-applicant. Main applicant: Patrik Ollas, RISE Research Institutes of Sweden. The project received a grant of 3 999 074 SEK.

Solbruksplaner för system- och resurseffektiv utbyggnad av solelproduktion, El från solen, Energimyndigheten, 2018. Main applicant. The project received a grant of 2 597 120 SEK.

Byggnadsantikvarisk solkartering: Potential för solelproduktion i kulturhistoriskt värdefull bebyggelse, Spara och bevara, Energimyndigheten, 2018. Co-applicant. Main applicant: David Lingfors, Uppsala University. The project received a grant of 1 014 891 SEK.

Advanced statistical methods for determining the hosting capacity of medium and low voltage networks, SweGRIDS, 2018. Main applicant. The project will receive a total grant of approx. 2 925 000 SEK.

Activity-Based Urban Building and Mobility Energy Modeling (UBMEM) for Planning of Future Cities, Viable Cities, Vinnova, 2018. Main applicant. The project received a grant of 4 387 349 SEK.

Energy storages for regional and local integration of heat and power systems, SamspEL 2016-2020, Energimyndigheten, 2016. Co-applicant. Main applicant: Magnus Åberg, Uppsala University. The project received a grant of 2 732 947 SEK.

Development and evaluation of forecasting models for solar power and electricity use over space and time, SamspEL 2016-2020, Energimyndigheten, 2016. Co-applicant. Main applicant: Joakim Munkhammar, Uppsala University. The project received a grant of 4 055 173 SEK.

Lastflexibilitetsscenarier i byggnadsbeståndet och deras påverkan på det lokala elnätsbolagets verksamhet (Load flexibility scenarios in the building stock and their impact on distribution system operators), Smarta Elnät, Energiforsk, 2016. Co-applicant. Main applicant: Claes Sandels, SP (RISE). The project received a grant of 500 000 SEK.

Increased Self Consumption of Photovoltaic Power for Electric Vehicle Charging in Virtual Networks, Smart Grid ERA-NET Cofund, 2015. Co-applicant. Main applicant: Per Wickman, Solelia Greentech AB. The project received a grant of 5 558 962 SEK.

Evaluation of technological solutions for managing extensive connection of photovoltaic systems in electricity distribution grids, El och bränsle från solen, Energimyndigheten, 2015. Main applicant. The project received a grant of 1 083 467 SEK.

Characterization of extensive photovoltaic power generation on city level, SolEl-programmet, Energimyndigheten, 2015. Main applicant. The project received a grant of 680 305 SEK.

4GDH-solutions for Swedish million-homes-programme residential areas, Samverkansprogram Fjärrsyn, 2015. Co-applicant. Main applicant: Magnus Åberg, Uppsala University. The project received a grant of 992 000 SEK.

Small-scale solar electricity in buildings – power for change in energy systems and everyday life, Energieffektivt byggande och boende, Energimyndigheten, 2013. Co-applicant. Main applicant: Jenny Palm, Linköping University. The project received a grant of 4 417 000 SEK.

Solar electricity in agriculture – realizable potential and new business models, Energieffektivt byggande och boende, Energimyndigheten, 2013. Co-applicant. Main applicant: Ola Pettersson, JTI. The project received a grant of 1 579 366 SEK.

Förbättrad kurskoppling och kollegial pedagogisk utveckling på STS-programmets energiinriktning, Teknisk-naturvetenskapliga fakultetens universitetspedagogiska förnyelsefond (TUFF), Uppsala universitet, 2013. Main applicant. The project received a grant of 127 500 SEK.

Combined conference and study visit at World Renewable Energy Forum (WREF) 2012 and the U.S. National Renewable Energy Laboratory (NREL), May 13-18, 2012, Formas, 2012. Main applicant. The project received a grant of 30 000 SEK.

Demonstration project for efficient use of locally produced solar electricity for electric vehicles, Demonstrationsprogram för elfordon, Energimyndigheten, 2012. Co-applicant. Main applicant: Per Wickman, Solelia Greentech AB. The project received a grant of 984 875 SEK

Konferensbevakning av den internationella solcellskonferensen PVSEC samt internationell syntesrapport, SolEl-programmet, Elforsk, 2011. Main applicant. The project received a grant of 82 000 SEK.

Increased consumer power in the Nordic electricity market, Allmänna Energisystemstudier (AES), Swedish Energy Agency, 2010. Co-applicant. Main applicant: Björn Karlsson, Mälardalen University. The project received a grant of 5 504 195 SEK.

Konsekvenser av avräkningsperiodens längd vid nettodebitering, SolEl-programmet, Elforsk, 2010. Co-applicant. Main applicant: Bengt Stridh, ABB. The project received a grant of 157 000 SEK.

Development of routines for calculation and visualization of energy use in dwellings from time-use data, Göteborg Energis Forskningsstiftelse, 2008. Main applicant. The project received a grant of 98 279 SEK.

Beräkning av energianvändning vid genomförande av aktiviteter, ELAN III, Elforsk, 2006. Co-applicant. Main applicant: Kajsa Ellegård, Linköping University. The project received a grant of 222 800 SEK.

Contract research

Beräkning av solenergipotentialen för Skånes bebyggelse enligt två scenarier för år 2020 och år 2050, 2016, contracted by Länsstyrelsen i Skåne Län for 20 work hours.

Beräkning av solenergipotentialen för Blekinges bebyggelse enligt två scenarier för år 2020 och år 2050, 2014, contracted by Länsstyrelsen i Blekinge Län for 120 work hours.

Kartläggning av potentialen för solel och solvärme i Dalarnas län, 2010–2011, contracted by Länsstyrelsen Dalarnas Län for 120 work hours.

Beräkningsmodell för ekonomisk optimering av solelanläggningar, 2009–2010, contracted by Sustainable Innovation i Sverige AB for 400 work hours.

Scientific leadership

Partnership Responsible for the strategic partnership between NCC and Uppsala University, 2019 –2023.

Head of Division, Civil Engineering and Built Environment, 2019–. Responsibilities: Executive responsibility for division organization, staff and economy, delegated from the Head of Department.

Professor Responsible for Research Programme, Civil Engineering and Built Environment, 2019 –. Responsibilities: Planning and organization of research activities and management of resources within the research programme.

Professor Responsible for Postgraduate Studies, Civil Engineering and Built Environment, 2019 –. Responsibilities: Quality management, development and organization of postgraduate studies within the subject.

Group leader for the Built Environment Energy Systems Group (BEESG), 2011–. Responsibilities: representing the group internally and externally, leading group meetings, coordinating research activities, developing research strategies, supervising Ph.D. students.

Group leader in the strategic research programme StandUp for Energy, 2014–. Responsibilities: coordinating scientific activities funded by StandUp, attending meetings, reporting to annual StandUp reports.

Leader of the Building Consortium of the Energy Systems Programme, together with Ewa Wäckelgård and Kajsa Ellegård, 2011–2015. Responsibilities: coordinating research activities, planning and chairing meetings, representing the consortium internally and externally, reporting and documenting collaborations.

Member of the scientific committee (Vetenskaplig Ledningsgrupp, VL) of the Energy Systems Programme (research programme and graduate school), Linköping University, 2011–2015. Responsibilities: representing Uppsala University in the graduate school, deciding on co-supervision of Ph.D. students, co-writing applications, participating in working groups, planning events.

National expert, nominated by the Swedish Energy Agency, in IEA-SHC Task 40: Towards Net Zero Energy Solar Buildings, 2010–2014.

Faculty opponent and examiner of PhD theses

Member of examination committee for Ph.D. thesis: Katarina Bäcklund, *Human-Centric Operations of Smarter Higher Educational Buildings in Sweden*, KTH, Sweden, 20 May 2024.

Member of examination committee for Ph.D. thesis: Abolfazl Khodadadi, *Electricity Market Design Strategies for Hydro-dominated Power Systems*, KTH, Sweden, 15 May 2024.

Member of examination committee for Ph.D. thesis: Patrik Ollas, *Buildings' Transition to Active Nodes: Assessing the Viability of DC Distribution, PV and Battery Storage*, Chalmers University of Technology, Sweden, 26 April 2024.

Pre-examiner of Ph.D. thesis: Jari Pulkkinen, *Assessing thermal demands and flexibility in buildings under changing climate - typical and extreme weather conditions*, University of Oulu, Finland, 2024.

Member of assessment committee for Ph.D. thesis: Mikkel Lindstrøm Sørensen, *Forecasting and hierarchical reconciliation for renewable energy production and consumption*, DTU, Denmark, 5 April 2024.

Member of assessment committee for Ph.D. thesis: Åse Lekang Sørensen, *Energy profiles and electricity flexibility potential in Norwegian apartment buildings with electric vehicle charging*, NTNU, Norway, 11 March 2024.

Member of examination committee for Ph.D. thesis: Mohammad Aslani, *Computational and spatial analyses of rooftops for urban solar energy planning*, University of Gävle, Sweden, 18 November 2022.

Member of assessment committee for Ph.D. thesis: *Julian Lemos Vinasco, Decision support tools for smart Home Energy Management Systems (HEMSs)*, DTU, Denmark, 20 June 2022.

Member of examination committee for Ph.D. thesis: Kevin Bellinguer, *Optimisation of the Use of Multiple Sources of Data in Short-term Photovoltaic Generation Forecasting Models*, MINES ParisTech PSL, France, 17 June 2022.

Member of examination committee for Ph.D. thesis: Joaquim Pedro Bento Gonçalves Pratas Leitão, *Adaptive Supervisory Framework for Cyber-Physical Systems Optimal Scheduling of Smart Home Components*, University of Coimbra, Portugal, 31 January 2022.

Member of examination committee for Ph.D. thesis: Oleksii Pasichnyi, *Advancing urban analytics for energy transitions: Data-driven strategic planning for citywide building retrofitting*, KTH, Sweden, 8 December 2020.

Member of examination committee for Ph.D. thesis: Lukas Lundström, *Probabilistic Calibration of Building Energy Models: For Scalable and Detailed Energy Performance Assessment of District-Heated Multifamily Buildings*, Mälardalen University, Sweden, 10 September 2020.

Member of examination committee for Ph.D. thesis: Egill Tómasson, *Impact of High Levels of Variable Renewable Energy on Power System Generation Adequacy*, KTH, Sweden, 10 June 2020.

External evaluator of Ph.D. thesis: Lukas Lundström, *A Framework for Probabilistic Building Energy Modeling (prel. title)*, Mälardalen University, Sweden, 2020.

Member of examination committee for Ph.D. thesis: Lina La Fleur, *Energy renovation of multi-family buildings in Sweden*, Department of Management and Engineering, Linköping University, Sweden, 25 October 2019.

Member of examination committee for Ph.D. thesis: Yang Zhang, *Integration of Distributed Renewable Energy and Energy Storages in Buildings*, Energy Processes, KTH, Sweden, 4 June 2019.

Faculty opponent on Ph.D. thesis: Richard Thygesen, *Low energy buildings equipped with heat pumps for high self-consumption of photovoltaic electricity*, Mälardalen University, Sweden, 29 April 2016.

Pre-examiner of Ph.D. thesis: Jyri Salpakari, *Demand side flexibility for solar and wind power integration*, Aalto University, Finland, 2017.

Pre-examiner of Ph.D. thesis: Sunliang Cao, *Matching analysis for on-site building energy systems involving energy conversion, storage and hybrid grid connections*, Aalto University, Finland, 2014.

External reviewer of Ph.D. thesis: Cajsa Bartusch, *Boosting behavioral change in residential electricity consumption: Demand response programs and feedback*, Mälardalen University, Sweden, 2011

Journal and conference boards

Associate Editor of the Journal of Renewable and Sustainable Energy (JRSE), published by the American Institute of Physics (AIP), 2019–2023.

Scientific coordinator and panel chair at the Baltic University Programme Symposium, October 19-20, 2021, online conference (Theme *Climate Change and Renewable Energy*).

Theme coordinator for the Baltic University Programme Symposium, August 25-26, 2020, Visby, Sweden (Theme 1: *Climate Change and Renewable Energy*).

Session chair for the 46th IEEE Photovoltaic Specialists Conference, June 16–21, 2019, Chicago, Illinois, USA (sub-area 11.1: *Solar Power Forecasting and Grid Integration*).

Sub-area chair for the 45th IEEE Photovoltaic Specialists Conference, June 10–15, 2018, Waikoloa Village, Hawai'i, USA (sub-area 9.6: *Solar Forecasting for PV Integration*).

Expert evaluator for appointments and promotions

Junior Research Professor (BOFZAP) Position, KU Leuven, Belgium, 2022.

Junior Research Professor (BOFZAP) Position, KU Leuven, Belgium, 2021.

Assistant professor promotion, Energy Technology, Luleå Technical University, Sweden, 2020.

Senior lecturer position in Construction Engineering, Umeå University, Sweden, 2020.

Professor position in Construction Management with specialization in Sustainability and Information Modeling, Umeå University, Sweden, 2020.

Adjunct senior lecturer position in Civil Engineering, Umeå University, Sweden, 2020.

Postdoc position in Energy, Forest and Built Environment, Dalarna University, Sweden, 2019.

Adjunct senior lecturer position in Civil Engineering, Umeå University, Sweden, 2019.

Senior lecturer position in Building Engineering, University of Gävle, Sweden, 2019.

Senior lecturer position in Civil Engineering, Umeå University, Sweden, 2019.

Project scientist promotion at The Center for Energy Research (CER) at the University of California, San Diego, USA, 2017.

Expert evaluator of research proposals

Panel member, Expert panel on hydrogen, *Collaborative and Knowledge-building Project 2022*, The Research Council of Norway, 2022.

Invited talks

Byggnaderna i framtidens energisystem, Nationell Byggläraркonferens 2021, Uppsala, Sweden, June 16, 2021.

Alternatives to grid reinforcements for managing high PV penetrations and their impact on grid costs, IEA PVPS Workshop, Chicago, USA, June 18, 2019.

Så mycket solel klarar elnäten, Solel för elbolag, Svensk Solenergi, Södertälje, March 7, 2019.

Är det svenska energisystemet förberett för stora volymer solel? Utmaningar, lösningar och forskningsbehov, Svenska Solelmässan, Uppsala, Sweden, November 27, 2018.

Large-scale introduction of solar power generation in urban environments: Opportunities and challenges, Swedish Consortium for Artificial Photosynthesis (CAP), Ångström Laboratory, Uppsala, Sweden, November 5, 2018.

Large-scale solar power generation in the built environment: Opportunities and challenges, Universidad Autónoma Metropolitana, Mexico City, Mexico, May 7, 2018.

Om solel i våra elnät: Möjligheter, utmaningar och lösningar, Svensk Solenergi, årsmöte, Stockholm, Sweden, April 25, 2018.

Mer solel i våra elnät: Resultat från ett forskningsprojekt tillsammans med Herrljunga Elektriska, Lokalkraft Sverige, Knistad Herrgård, Skövde, Sweden, April 13, 2018.

Hosting capacity for PV in electricity distribution grids and options to improve it, Dalarna University, Borlänge, Sweden, February 28, 2018.

Möjligheter för nätägare att hantera storskalig anslutning av solcellssystem: Översikt och forskningsresultat, Elnätsdagarna, Stockholm/Arlanda, Sweden, November 21, 2017.

Möjligheter för nätägare att hantera stora volymer solel, Solforum 2017, Västerås, Sweden, September 13, 2017.

Characterization of the solar resource in the built environment, Ångström 20 Years, Ångström Laboratory, Uppsala, Sweden, April 21, 2017.

Modeling end-user behavior for electricity demand simulations, StandUp Academy, Stockholm, Sweden, December 5, 2016.

Omfattande utbyggnad av solelproduktion – hinder och möjligheter, Mikroproduktion av el, Informa Sweden, Stockholm, Sweden, December 8, 2014.

Hinder och möjligheter för egenproducerad solel i Sverige, Spektrum Ångström lärardagar: Jordklotets resurser, Ångström Laboratory, Uppsala, Sweden, April 19, 2013.

Solenergin i stadsmiljön – potential och möjligheter, Skapa morgondagen, Uppsala Municipality and Uppsala Climate Protocol, Uppsala, Sweden, December 7, 2012.

Beräkningsmodell för ekonomisk optimering av solelanläggningar, Solenergi i stadsplaneringen, Malmö, Sweden, April 20, 2012.

Challenges with high PV penetrations in distribution grids, Utility Activities Within Photovoltaics, Swedish Energy Agency and IEA-PVPS, Stockholm, Sweden, April 19, 2012.

Vad händer på den internationella och på den svenska solcellsmarknaden?, SolEl-seminarium, Umeå, Sweden, November 29, 2011.

Rapport från PVSEC 2011 – Europas ledande solcellskonferens, SolEl-seminarium, Älvsjö, Stockholm, Sweden, November 9, 2011.

Internationell syntes av läget på solcellsmarknaden, SolEl-seminarium, Älvsjö, Stockholm, Sweden, November 9, 2011.

A systems perspective on net zero energy solar buildings in the power system, Vedvarende Energi – Løsningen til Energineutralt Byggeri?, Aalborg, Denmark, August 23, 2011.

Opportunities and challenges for distributed photovoltaics in Scandinavia, Midnight Sun Conference, Trondheim, Norway, June 15, 2011.

Software development

Solelekonomi 1.0. Online software for estimating the time-dependent energy output and economic feasibility of a photovoltaic system, financed by Elforsk's SolEl Programme. Publically available online at:

https://energiforsk.se/program/solel/rapporter/berakningsprogrammet-solekonomi/

Pedagogical education

Supervision of Ph.D. students, Uppsala University, 2011 (3 weeks full time).

University Teacher Training Course, Uppsala University, 2011 (5 weeks full time).

Supervisor Education, step 1, Uppsala University, 2007 (1 week full time).

Pedagogical leadership

Director of Postgraduate Studies at the Department of Civil and Industrial Engineering, Uppsala University, 2020–. Responsibilities: Coordination of postgraduate studies at the department.

Programme Coordinator for the international Master Programme in Energy Technology (KIC InnoEnergy MSc Entech), 2016–2019. Responsibilities: leading programme development and evaluation activities, chairing meetings of the programme council, reporting to the faculty board of teaching, informing and keeping dialogue with programme students.

Course Director for several undergraduate courses (see list of courses below), 2012–. Responsibilities: planning and organizing teaching activities, developing and evaluating courses, examining and grading students.

Undergraduate teaching

Urban and Decentralized Energy Systems, 5 hp, Uppsala University. Responsible for course development, course director, examiner, teacher, 2020–

Project 1: Design of detached houses, 15 hp, Uppsala University. Co-responsible for course development, examiner, 2019–2020.

Project 2: Detailed design of detached houses, 10 hp, Uppsala University. Co-responsible for course development, course director, examiner, 2019–2020.

Project in Infrastructure Systems, 5 hp, Uppsala University. Course director, responsible for course development, main teacher and project supervisor, 2018–2019.

Degree Project in Energy Technology, 15 hp, Uppsala University. Course director / examiner, 2016–2019.

Independent Project in Sociotechnical Systems Engineering, 15 hp, Uppsala University. Course director, teacher and B.Sc. project supervisor, 2012–2021, 2023.

Renewable Energy Technology, 5 hp, Uppsala University. Course director and main teacher, 2012–2019.

Solar Thermal Technologies, 5 hp, Uppsala University. Course director and main teacher, 2013–2019.

Solar Energy – Technology and Systems, 10 hp, Uppsala University. Assistant course director, responsible for solar irradiance, solar power integration and solar thermal systems (approx. half the course), 2010–2019.

Technologies and Systems for Low-Energy Buildings, 5 hp, Uppsala University. Assistant course director and teacher, 2013.

Solar Energy Technologies for Electricity Production, 5 hp, Uppsala University. Lectures and computer labs about solar irradiance and solar power integration, 2011–2019.

Analysis of Power Distribution Grids, 5 hp, Uppsala University. Two lectures about load modeling and hosting capacity, one seminar on hosting capacity and responsible for a project about distribution network design, 2016–2019.

Grid Connection of Variable Energy Sources, 5 hp, Uppsala University. Lecture on PV system integration and one computer lab, 2015–2019.

Analysis of Electric Power Systems, 10 hp, Uppsala University. Two lectures about electricity distribution and distributed generation, responsible for a project about solar power integration, 2010–2019.

Energy System Physics, 10 hp, Uppsala University. Guest lecture about photovoltaic technology and systems, 2013–2018.

Energy Efficiency, 5 hp, Uppsala University. Guest lecture about solar collector physics, 2014–2015.

Energy Security in Local and Global Energy Systems, 5 hp, Uppsala University. Guest lecture about energy security issues for distributed photovoltaics, 2011–2013.

Presentation Techniques, 5 hp, Uppsala University. Commenting and grading student presentations and written reports, 2011–2018.

Independent Project in Energy Systems, 15 hp, Uppsala University. Supervisor for B.Sc. projects, 2010–2015.

Postgraduate teaching

Perspectives on Energy Systems (PoES), Ph.D. course commissioned by the Swedish Energy Agency. Supervisor of individual and group projects 2009–2010 (PoES4–PoES6), responsible for organizing one of four gatherings per course 2013–2014 (PoES9–PoES11), course director 2014 (PoES11).

Two guest lectures on “Renewable energy in energy systems” and “Users within the energy system” in the Energy Systems course within the REESBE graduate school, Eskilstuna, November 14, 2013.

Ph.D. course “Electricity distribution and distributed generation” together with the Division of Electricity, Department of Engineering Sciences, Uppsala University, 2015.

Supervision and scientific review of undergraduate theses

Supervisor or scientific reviewer for 50+ M.Sc. students since 2010 (including ongoing commitments).

Pedagogical boards and groups

Teacher representative in the Graduate Educational Board (FUN) at the Faculty of Science and Technology, Uppsala University, 2020–2023.

Member of the Executive Committee of the Programme Board for the bachelor programme in Construction Engineering (Högskoleingenjörsprogrammet i byggteknik), Uppsala University, 2015–2016, 2019–. The work has been of an advisory nature, including recommendation of changes to the programme curriculum and course syllabuses.

Member of the Executive Committee of the Programme Board for the engineering programme Systems in Technology and Society (System i teknik och samhälle, STS), Uppsala University, 2009–2010 and of the new restructured Programme Board 2013–2016. The work has been of an advisory nature, including recommendation of changes to the programme curriculum and course syllabuses.

Member of the working group for the undergraduate course *Man and the Machine – Perspectives on Technology, Power and Society* (Människan och maskinen – perspektiv på teknik, makt och samhälle, 7.5 hp), Cemus, Uppsala University, 2010–2014. Examiner for the course 2013-2014. The working group decided on the course syllabus and the detailed contents and examination methods of the course.

Member of the planning board for Ph.D. courses in the Energy Systems Programme (BUF), Linköping University, 2008–2012. The planning board decided on course syllabuses for the four courses included in the graduate school, evaluated the courses and was responsible for most of the detailed planning of the courses.

Member of the course committee for the Ph.D. course *Perspectives on Energy Systems* (PoES), commissioned by the Swedish Energy Agency, 2009–2014. The course committee consisted of representatives from all participating universities and planned, evaluated and organized the course.

Pedagogical projects

Project manager for the pedagogical project *Förbättrad kurskoppling och kollegial pedagogisk utveckling på STS-programmets energiinriktning*, Uppsala University, 2013–2014. The project evaluated and improved the connection and collaboration between the courses in the energy profile of the STS engineering programme.

Pedagogical works

Joakim Widén, Joakim Munkhammar, *Solar Radiation Theory*, Department of Engineering Sciences, Uppsala University, 2019.

Commercialization and entrepreneurship

Founder of the company *Sunwide Solar Computing*, for commercialization of software based on models developed in my research, and for consulting within solar energy modeling and simulation, 2016–.