

ULRIKE PASSE Dipl.-Ing. Architekt •

Professor of Architecture

Iowa State University, 491 College of Design Ames, Iowa 50011 • 515-294-7142 • E-mail: upasse@iastate.edu

Director of the Center for Building Energy Research (CBER)

EDUCATION AND PROFESSIONAL LICENSE

Registered Architect in Germany	Architects Registration Board Berlin	1993
Technical University Berlin	Architecture Dipl. – Ing.	1990
University College London	Architecture non-degree-study	1988/89

ACADEMIC APPOINTMENTS

Iowa State University, Ames, IA, Professor with tenure	since	08/2021
Iowa State University, Ames, IA, Associate Professor with tenure	since	08/2013
Iowa State University, IPRT, Ames, IA, Director of CBER	since	10/2008
Iowa State University, Ames, IA, Assistant Professor	since	08/2007
Iowa State University, Ames, IA, Lecturer		01/2006
University of Applied Sciences, Potsdam, Germany, academic/research faculty	07/2004-	12/2005
Technical University Berlin, Germany, academic/research faculty		1993- 1999

ARCHITECTURAL PRACTICE

Passe.Kälber Architects, Berlin, Germany, founding partner	1995 - 2010
Marina Stankovic Architect; Berlin, Germany	1991 - 1993
Stirling & Wilford Architects, London, UK; Berlin, Germany	1989 1990

BOOKS & EDITED VOLUMES

- Passe, Ulrike and Francine Battaglia, *Designing Spaces for Natural Ventilation: An Architect's Guide*, London, New York: Routledge 2015. <http://www.tandf.net/books/details/9780415817776/>
- Passe, Ulrike, Janette Thompson, and Kimberly Zarecor, eds. 2020. *SUS-RURI: Proceedings of a workshop on developing a convergence sustainable urban systems agenda for redesigning the urban-rural interface along the Mississippi River watershed held in Ames, Iowa, August 12–13, 2019*. Ames, Iowa: Iowa State University Digital Press. <https://doi.org/10.31274/isudp.35>.

BOOKCHAPTERS

- Shenk, L., Krejci, C., Passe, U., (2023) Agents of change—together: Using agent-based models to inspire social capital building for resilient communities, in: *More than Bouncing Back: Examining Community Resilience Theory and Practice*; Edited By Anne Cafer John J. Green, Gary Goreham, Routledge <https://doi.org/10.4324/9781003240297>
- Stonewall, J., Dorneich, M., Shenk, L., Krejci, C., Passe, U., (2019) Inclusive Decision-Making: Applying Human Factors Methods to Capture the Needs and Voices of Marginalized Populations invited book chapter in: *Advancing Diversity, Inclusion, and Social Justice through Human Systems Engineering*, ed.: Rod D. Roscoe, Erin K. Chiou, Abigail R. Wooldridge, CRC Press, Taylor and Francis Group.
- Passe, U., Timothy Lentz (2016) *Designing Passive Solar Heated Spaces*, in: *Low energy low carbon architecture: recent advances and future directions*, edited by Khaled Al Sallal, CRC Press, Taylor and Francis. ISBN 9781138027480

FUNDED RESEARCH PROJECTS (recent & currently active)

- Passe, Ulrike (PI), co-PIs: Nicholas Terpstra-Schwab (UNI), Michael Dorneich (ISU), Caroline Krejci (UTA), Jeremy Caron (City of Des Moines), (01/2023-12/2025) NSF SCC-IRG Track 2: A data-driven approach to designing a community-focused indoor heat emergency alert system for vulnerable residents (CommHEAT) (\$1,200,000)

- Passe, Ulrike (PI), co-PIs: Kristen Nelson (UMinnesota), Charles Nilon (UMissouri), Charles Santo (UMemphis) & Traci Birch (LSU), (08/2022-01/2027), US NSF DISES-RCN: Developing new strategies for urban-rural systems to overcome interconnected social, environmental, and technological challenges (URSYS), Dynamics in Social and Environmental Systems Research Network Program at the National Science Foundation (\$500,000).
- Passe, Ulrike (PI) with Ganapathysubramanian, B. & Passalaqua, A., (2022-2025) Iowa Economic Development Authority (IEDA) Iowa School Ventilation and Energy Efficiency Retrofit Assessment (\$199,878)
- Thompson, J., (PI), Ganapathysubramanian, B., Zhou, Y., Liebman, M., Schwab, N., Passe, (Senior Personnel), Krejci, C, Gassmann, P., (01/2020-12/2024) (\$2,5mio), NSF INFEWS / T1: Social and biophysical models to integrate local food systems, climate dynamics, built forms, and environmental impacts in the urban FEWS nexus.
- Ulrike Passe (PI), Janette Thompson, Kimberly Zarecor, SUS_RURI: Developing a Convergence Sustainable Urban Systems Agenda for Redesigning the Urban-Rural Interface along the Mississippi River Watershed, NSF workshop grant 07/01/2019 - 12/31/2019 over \$50,000.
- Passe, U, (PI), Gutowski, W., Shenk, L., Zhou, y., (\$29,999) Extreme Heat Adaptation Strategies for Buildings and Neighborhoods in the Upper Midwest Using Novel Urban Energy Modeling Techniques, submitted to the University of Iowa Center for Global and Regional Environmental Research (CGRER), Duration: 07-01-2019 – 06-30-2020.
- Kimber, Anne, Kristen Cetin, Cristina Poleacovschi and Ulrike Passe, Iowa Energy Center Grant (2020-2024), Toolkit for Identification, Characterization and Energy Evaluation of Low-Efficiency Rural Housing, 3 year grant over \$287,354.
- Kimber, Anne (PI), Passe, U. (co-PI) (2019-2020) (\$158,396) Energy Storage for Resiliency funded by the Iowa Economic Development Authority (IEDA).
- Passe, Ulrike, Anderson, N., De Brabanter, K., Dorneich, M., Goodwin, J., Krejci, C., Poplin, A., Shenk, L., Anderson, C., & Graham, L. (2016-2019). Big data for sustainable city decision-making. Iowa State University, Presidential Initiative for Interdisciplinary Research in Data Driven Science. \$375,000 September 1st 2016 – June 30th, 2019. (\$375,000)

JOURNAL PUBLICATIONS, PEER_REFEREED CONFERENCE PROCEEDINGS (RECENT SELECTIONS)

- Gravert, K.+ Poleacovschi, C., Ballesteros, L.#, Cetin, K., Passe, U., Kimber, A., Malekpour Koupaei, D.+ Douglass, F.* (2024). Homeowners' Motivations to Invest in Energy-Efficient and Renewable Energy Technologies in Rural Iowa, ASCE OPEN: Multidisciplinary Journal of Civil Engineering, Volume 2, Issue 1, <https://doi.org/10.1061/AOMJAH.AOENG-0010>
- Hashemi, F., Salahi, N., Ghiasi, S., Passe, U., (2024). Comparative Analysis of Urban Heat Island Effects on Building Energy Consumption in the U.S. Midwest A combined workflow using Urban Weather Generator and Future Typical Meteorological Year Climate Scenarios, In: Proceedings of 37th PLEA Conference, Sustainable Architecture and Urban Design Wroclaw, Poland, June 25-28, 2024
- Passe, U., (2023), Assessing a community-engaged decision framework for increased urban neighborhood resilience in a warming climate, Proceedings Book of the 2021 American Institute of Architecture Intersections Conference on Communities (virtual presentation).
- Domeich, M.C., Krejci, C.C., Schwab, N. Tiffanie F. Stone#, Erin Huckins+, Janette R. Thompson & Ulrike Passe (2023). Producer and consumer perspectives on supporting and diversifying local food systems in central Iowa. Agric Hum Values 41, 683 (2024). <https://doi.org/10.1007/s10460-023-10517-4>
- Malekpour Koupaei, D.#, Cetin, K., Passe, U., Kimber, A., Poleacovschi, C, (2023). Identifying Rural High Energy Intensity Residential Buildings Using Metered Data, Energy and Buildings 298(8):113604; DOI: 10.1016/j.enbuild.2023.113604
- Malekpour Koupaei, D.#, Cetin, K. S., & Passe, U. (2022). Stochastic residential occupancy schedules based on the American Time-Use Survey. Science and Technology for the Built Environment, 28(6), 776–790.

- <https://doi.org/10.1080/23744731.2022.2087536>
- Ghiasi, S., Marmur, B., Thompson, J., Zhou, Y., Passe., (2021), A sensitivity analysis to investigate urban heat island impact on building energy consumption submitted to 2021 International Building Performance Simulation Association (IBPSA) international conference in Bruegge, Sept 1-3, 2021
- Malekpour, D., Marmur, B., Thompson, J., Passe, U., (2021) A framework for integrating high-resolution trees in urban energy use models, submitted to 2021 International Building Performance Simulation Association (IBPSA) international conference in Bruegge, Sept 1-3, 2021
- Thompson, J., Ganapathysubramanian, B., Chen, W., Dorneich, M., Gassman, P., Krejci, C., Liebman, M., Nair, A., Passe, U., Rosentrater, K., Schwab, N., Stone, T., Wang, Y. and Zhou, Y. (2021). Iowa UrbanFEWS: Integrating social and biophysical models for exploration of urban food, energy and water systems. *Frontiers in Big Data, Section Data-driven Climate Sciences*.
- Xu, F., Xu, S., Passe, U., and Ganapathysubramanian, B. (2021). Computational study of natural ventilation in a sustainable building with complex geometry, *Sustainable Energy Technologies and Assessments* 45:101153. <https://doi.org/10.1016/j.seta.2021.101153>
- Passe, U., (2020). A design workflow for integrating performance into architectural education, *Buildings and Cities, Special issue: Education and Training: Mainstreaming Zero Carbon; Guest editors: Alison Kwok (University of Oregon) and Fionn Stevenson (University of Sheffield), Buildings and Cities, 1(1), 565–578. DOI: http://doi.org/10.5334/bc.48*
- Passe, U., Dorneich, M., Krejci, C., Koupaei, D. M., Marmur, B., Shenk, L., Stonewall, J.#, Thompson, J., Zhou, Y. (2020). An urban modelling framework for climate resilience in low-resource neighbourhoods. *Buildings and Cities, 1(1), 453–474. DOI: http://doi.org/10.5334/bc.17*
- Kunwar, N., Cetin, K.S., Passe, U., Zhou, X. Li, H. (2020) Energy Savings and Daylighting Evaluation of Dynamic Venetian Blinds and Lighting through Full-Scale Experimental Testing, *Energy* 197 (2020), DOI: 10.1016/j.energy.2020.117190
- Kunwar, N., K.S. Cetin, U. Passe, Calibration of Energy Simulation using Optimization for Buildings with Dynamic Fenestration Systems, *Energy & Buildings* (2021), doi: <https://doi.org/10.1016/j.enbuild.2021.110787>
- Shenk, L., Krejci, C., & Passe, U. (2019). Agents of change - together: Using agent-based models to inspire social capital building for resilient communities. *Community Development, 50(2), 256–72. https://doi.org/10.1080/15575330.2019.1574849*
- Huang, W., Krejci, C.C., Passe, U., Dorneich, M.C., Shenk, L., & Stonewall, J. (2018) Analyzing Residential Weatherization Decisions using Hybrid Simulation Modeling. *Energy Policy, Building Simulation: An International Journal, Springer Publishing. DOI: 10.1007/s12273-019-0518-4*
- Yong X. Tao, Yimin Zhu, Ulrike Passe, Modeling and data infrastructure for human-centric design and operation of sustainable, healthy buildings through a case study, *Building and Environment, Volume 170, March 2020, https://doi.org/10.1016/j.buildenv.2019.106518*
- Stonewall, J., Huang, W., Dorneich, M., Shenk, L., Krejci, C., & Passe, U. (2018). Energy Use and Weatherization Practices: Applications for Agent-Based Modeling to Support Vulnerable Populations. *Proceedings of the 62nd Human Factors and Ergonomics Society Annual Meeting*.
- Kunwar, N, Cetin, K.S., Passe, U. (2019). Daylighting and Visual Comfort Performance Of Integrated Dynamic Roller Shades And Lighting Controls. *Architectural Engineering Institute Conference 2019. Tysons, VA. April 3-6, 2019.*
- Passe, U., Malekpour, D., Hashemi, F., Tabard, V., (2019) Modelling Framework for Refined Urban Residential Occupancy Schedules, *Building Simulation 2019 International Building Performance Simulation Association (IBPSA) in Rome, September 2019.*
- Passe, U., Thompson, J., Ganapathysubramanian, B., Gao, B., Marmur, B. (2019). The impact of trees on passive survivability during extreme heat events in warm and humid regions. Accepted for the *Comfort at the Extremes (CATE) Conference, April 2019, Dubai, UAE.*
- Passe, U., Malekpour, D., Hashemi, F., Tabard, V., (2019). A Technique for Developing High-Resolution Residential Occupancy Schedules for Urban Energy Models (SimAUD 2019, Atlanta, GA).
- Hashemi, F., Passe, U., (2019) Climate and Occupancy Based Investigation of Air Pollutants in Office Spaces, Abstract

accepted for IAQVEC 2019: Healthy nearly Zero Energy Buildings, Bari, September 2019.

Ulrike Passe: Integrating human behaviour and thermal-physical systems modelling into neighbourhood energy evaluation to prepare for extreme heat events, International Conference on Energy Research and Social Science, Arizona State University, May 28-31, 2019

Hashemi, F., Marmur, B. Thompson, J., Passe, U. (2018). Developing a Workflow to Integrate Tree Inventory Data into Urban Energy Models, in: Proceedings of the 2018 Simulation in Architecture and Urban Design Conference, (SimAUD 2018), June 05-07 at TU Delft, the Netherlands, edited by: T. Rakha, M. Turrin, D. Macumber, F. Meggers, and S. Rockcastle.

Kunwar, N., Cetin, K.S., & Passe, U., (2018). Dynamic Shading in Buildings: a Review of Testing Methods and Recent Research Findings, Current Sustainable Renewable Energy Report, Springer Publ, DOI 10.1007/s40518-018-0103-y

Kunwar, N, Cetin, K.S., Passe, U. (2019). Daylighting and Visual Comfort Performance Of Integrated Dynamic Roller Shades And Lighting Controls. Architectural Engineering Institute Conference 2019. Tysons, VA. April 3-6, 2019.

Kunwar, N, Cetin, K.S., Passe, U., Gorostiaga, Y. (2018). Energy Performance of Automated Dynamic Interior Venetian Blinds in Commercial Buildings. ASHRAE Annual Conference, Houston, TX, June 23-27, 2018.

Wu, L., Chinde, V., Sharma, H., Passe, U., Sarkar, S (2018). A Data-driven Approach towards Integration of Microclimate Conditions for Predicting Building Energy Performance, 5th International High Performance Buildings Conference at Purdue, July 9-12, 2018

Kunwar, N., Cetin, K.S., Passe, U. (2018) Effect of Automated Dynamic Control of Interior Roller Shades on Daylighting and Energy Performance of South Facing Office Spaces, Fifth BEST Conference: Building Enclosure Science & Technology, Philadelphia, PA. April 15-18, 2018.

Kunwar, N., Cetin, K.S., Passe, U., Gorostiaga, Y. (2018). Energy Performance of Automated Dynamic Interior Venetian Blinds in Commercial Buildings. ASHRAE Annual Conference, Houston, TX, June 23-27, 2018.

Kunwar, N., Cetin, K.S., Passe, U. (2018). Energy Performance of Automated Dynamic Interior Roller Shades using Calibrated Simulation. 2018 Building Performance Analysis Conference and SimBuild. Chicago, IL, Sept 26-28, 2018

Passe, Ulrike, AIA Iowa workshop 22: Building Energy Research with the 2009 Iowa State University's Solar Decathlon Home: Lessons Learned for Sustainable Design in Iowa presentation, presented Sept 29, 2018 at the AIA Iowa Annual Convention in Des Moines.

Passe, U., Deza, M., Ganapathysubramanian, B., He, S., Vansice, K., Xu, S. (2016). Typological studies for passive design strategies based on coupled measured and modelled data. Proceedings of the 2016 Simulation for Architecture and Urban Design (SimAUD) conference, May 16-18, 2016, London.

Kalvelage, Kelly, Ulrike Passe, Shannon Rabideau, and Eugene S. Takle. "Changing Climate: The Effects on Energy Demand and Human Comfort." *Energy and Buildings* 76, no. 0 (2014): 373-80.

AWARDS & HONORS

AIA Iowa Educator Award	2017
https://www.design.iastate.edu/news/2017/12/ulrike-passe-aia-iowa-educator-award/	
Iowa State University College of Design Research Award	2016
NSF Iowa EPSCoR Broader Impacts Mentoring and Outreach Award	2014
http://iowaepscor.org/news/annual/2014/Passeaward	
Iowa State Alumni Association IMPACT Award for the interdisciplinary Solar Decathlon project	2010
ISU College of Design Faculty Award for Extraordinary performance	2009
Hans-Schaefer-Prize (BDA-Berlin) for emerging architects practices in Berlin	1998

INVITED LECTURES AND PRESENTATIONS (Relevant Selection)

- Passe, Ulrike; Sept 24-25, 2023: The 8th International ICARB Conference 2023, Invited keynote: Free Cooling from Air Movement - a key to Net Zero Buildings.
- Passe, U., Improving ventilation on the macro and micro scale, Invited Keynote at RESILIENT COMFORT: Climate Change, COVID and Ventilation 5th-6th September 2022, Edinburgh organized by the international Comfort at the Extreme (CATE) Network.

Passe, Ulrike, The Impact of Trees on Passive Survivability during Extreme Heat Events in Warm and Humid Regions, Invited presentation in Seminar 52: How Big Are the Climate Variations Within a City and How Much Do They Impact Building Energy Use? ASHRAE Winter Conference, Orlando FL., February 4, 2020.
 Passe, U., Indo-Swiss Building Energy Efficiency Project (BEEP): keynote lecture at the 2018 BEEP Camp for Building Science Educators, December 22-23, 2018 at the CEPT University in Ahmedabad, India. 2018

COURSES TAUGHT (RECENT SELECTION)

ARCH 601 Sustainable Building Design (Towards net-zero) (Graduate Design Studio)
 ARCH 451/541 Whole Building Environmental Performance Modeling
 ARCH 345 Building Science and Technology I
 ARCH 346 Building Science and Technology II (Env Forces and Controls Module)
 ARCH 347 Building Science and Technology III (Env Forces and Controls Module)
 ARCH 348 Building Science and Technology IV (Env Forces and Controls Module)
 ARCH 445 Building Science and Technology V (Env Forces and Controls Module)
 ARCH 576 DE Study Abroad: Berlin Summer Academy: Designing for a Low-Carbon Life

STUDENT AWARDS AND PRIZES (RECENT)

TOP 10 COTE 2020 Anannya Das and Connor Mougins Bazaar 324 (Anannya selected as juror for 2021
<https://www.acsa-arch.org/competition-winners/winner-bazaar-324/>

DIRECTION OF MASTERS CANDIDATES (Major Professor / last 5 years)

M.S. in Architecture thesis supervisor for Negar Salahi	2024
M.S. in Architecture thesis supervisor for Fatemeh Yazdandoust	2023
M.S. in Architecture thesis supervisor for Sedigheh Ghiasi	2021
M.S. in Architecture thesis supervisor for Glenn Melvin Veigas	2019
M.S. in Architecture thesis supervisor for Farzad Hashemi	2018

SERVICE ON MASTERS / PhD COMMITTEES (selected, last 5 years)

PhD Kunwar, Niraj, " Experimental and Simulation-based Performance Analysis of Integrated Dynamic Shading and Lighting Controls in Office Spaces" defense May 11, 2020
 PhD Thesis Committee member for Kelly Kalvelage in IMSE (2021)
 PhD in Mechanical Engineering, Thesis Committee member for Boshun Gao (2021)
 Master of Science in CCEE, Thesis Committee Member for Celso Santos, Energy-Efficient Technology Retrofit Investment Behaviors of Households in Lower and Higher Income Regions, Major Advisor: Kristen Cetin, Defense July 6, 2020

PROFESSIONAL LEADERSHIP, BOARD membership (A Selection)

Passive Low Energy Architecture (PLEA) International Board of Directors	since 2020
Society for Building Science Educators (SBSE) President	2017-2021
ASHRAE Corresponding Member of Technical Committee 4.2: Weather Data	since 2011

INSTITUTIONAL SERVICE

Faculty Senate Research Policy and Planning Committee (RPP) Chair since Fall 2023, member since fall 2019
 Department of Architecture P&T Committee Chair 2023-2024
 Technology Substantive Area Committee Member (Chair 2007-2014)
 Research Extension and Outreach Council Chair 2014- 2022
 Search Committee for Design, Computation, Performance Chair 2020