

ULRIKE PASSE Dipl.-Ing. Architect BDA - Assistant Professor of Architecture  
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Director of the Center for Building Energy Research (CBER), Iowa State University, Institute for Physical Research and Technology

## 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, 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    |
| University of Kentucky; Architecture Study-Abroad Program in Berlin         | F        | 2004       |
| University of Kentucky; Architecture Study-Abroad Program in Berlin         | F        | 2002       |
| Technical University Berlin, Germany, academic/research faculty             |          | 1993- 1999 |
| Technical University of Liberec, Czech Republic, studio instructor          | Su       | 1994       |

## ARCHITECTURAL PRACTICE

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

## FUNDED RESEARCH PROJECTS

"Improving Energy Efficiency in Schenker Logistics Warehouses in Iowa City"  
(PI: Passe, Co-PI: Nelson) Funded by IPRT Company Assistance Program and DBSchenker Logistics (Total project cost: \$53,619 of which:  
Company: \$25,000/IPRT: \$16,811/ ISU IDC subsidy: \$11,808) 2009

"Cost Benefit Analysis for Energy Efficiency in a Small Retrofit Building" PI (\$7,500)  
Small Demonstration Grant funded by the Iowa Energy Center. 2009

US Department of Energy's Solar Decathlon 2009  
Principal Investigator, Faculty Adviser  
to design and build a solely solar powered 800sqft house (\$100,000 award / \$805,000 total budget),  
Co-funded by Iowa State University, Department of Energy's Ames Laboratory,  
ISU IPRT, Iowa Energy Center and others  
Co-PI's: Bruski, Cardinal-Pett, Dalal, Grewell, Geske, Honeycutt, Horwitz, Jarboe, Martin,  
Muecke, Nelson, Pate, Shane, Strong, Townsend, Zarecor 2008

"The fluid dynamics of air flow in free flow open spaces: An architectural approach to energy efficient buildings", (Co-PI: Dr. F. Battaglia) Research Award, Boston Society of Architects (\$20,000) 2007

"Master of Science by Research" (PI: Prof. Dr.-Ing. Johannes Vielhaber) leading researcher  
University of Applied Science Potsdam, funded  
by State of Brandenburg and German Federal Education and Research Agency (~ \$150,000) 2004/5

"Systematic building with steel" (PI: Prof. Matthias Sauerbruch)  
TU Berlin, TU Darmstadt, Vallorec & Mannesmann Steel GmbH on the  
relationship of industrial prefabrication, climate control and architectural design (~ \$40,000) 1998

## REFEREED PAPERS, JOURNAL PUBLICATIONS, (RELEVANT SELECTIONS)

- Passe, Ulrike, Stoakes, P. Battaglia, F.: "Interdisciplinary Research into the Fluid Dynamics of Natural Ventilation Flows" In *Healthy Buildings 2009: Proceedings of the 9th International Healthy Buildings Conference and Exhibition*. Eds.: Santanam, S., Bogucz, E.A., Peters, C., and Benson, T., Healthy Buildings 2009, Syracuse, NY, USA. Paper No: 226. Official publication of the Syracuse Center of Excellence in Environmental and Energy Systems for the 9th International Conference of ISIAQ in Syracuse, USA.
- Passe, Ulrike; "Designing Sensual Spaces: Integration of Spatial Flows Beyond The Visual" in: *Design Principles and Practices; An International Journal* Vol. 3, Common Grounds Publisher, Melbourne 2009.
- Passe, Ulrike; "Atmospheres of Space. The development of Alvar Aalto's free flow section as a climate device." in: *Architectural Research Quarterly (ARQ), Linking practice and research*, volume 12 number ¾ 2008, Cambridge University Press, Cambridge, UK, 2008.
- Passe, Ulrike: Haus Marxen / Germany / 2001 in: *Invitation to ArchiPhen, Some approaches and interpretations of Phenomenology in Architecture*, edited by Neuman, E & Aravot, I. The Center for Architectural Research and Development, Technion IIT Haifa, Israel 2008.
- Passe, Ulrike, Stoakes, P. Battaglia, F.: Simulation of Natural Ventilation Flows: Possibilities for the Restoration of the Viipuri Library, in: *The Challenge of Change, Dealing with the Legacy of the Modern Movement, Proceedings of the 10th International Docomomo Conference*, edited by Heuvel, D, Mesman, M., Quist, W., Lemmens, B. IOS Press Delft, 2008.
- Passe, Ulrike: 'Space is Technology' in: *Proceedings 'Architecture & Phenomenology'*, edited by Eran Neumann and Iris Aravot., *Technion*, Haifa, Israel, 2007.
- Passe, Ulrike: 'Free-flow Open Space, Climate and Sustainability', in: *Emerging Research and Design, EAAE Transactions on Architectural Education number 32* edited by Wingert-Playdon, Neuckermans, H.; Proceedings of the International ARCC/EAAE Conference, Philadelphia, , 2007
- Passe, Ulrike: "Sustainable Building Typology: Free flow open space as climate technology" in: *The International Journal of Environmental, Social, Cultural and Economic Sustainability*, Vol. III. Common Ground Publisher, Melbourne 2007.
- Passe, Ulrike: 'Free-flow Open Space, Climate and Sustainability', in: *Proceedings of Healthy Buildings 2006*, Vol III p.27, Ed: E. de Oliveira Fernandes, M. Gameiro da Silva, J. Rosado Pinto, Lisbon 2006.
- Passe, Ulrike, N. Schincker: "Steel-Prototypes" Technical University Berlin, research-publication, 1999
- Passe, Ulrike, H. Kleine (Ed.): "Nach dem Bauhaus / After the Bauhaus - 13 positions on undergraduate design teaching", ISA, TU Berlin Press, Book 1, 1997

## ARCHITECTURAL PUBLICATION ON OWN DESIGN WORK (RELEVANT SELECTIONS)

- House Marxen's Interior by Passe. Kaelber Architects in: Ro Spankie: Basics Interior Architecture: drawing out the interior, AVA Academia Lausanne, 2009
- 1000 x European Architecture, ed.: Chris van Uffelen, Braun Verlag Berlin, p. 577. 2007
- "Casa a Marxen," in *'l' architettura naturale', international review on sustainable architecture*; anno IX, no 30, Marzo 2006, Edicom Edizione, Milano, p. 62 – 65 2006
- "House Marxen" in *Architektur in und aus Berlin 04*, ed: Architektenkammer Berlin. p. 84. 2004
- "Practical Experience - A Students Guide to Internship and the Year Out," (Ed: Rüedi-Ray, K., Marjanovic´, I, Tankard, J), London Elsevier Press. 2004
- "House Marxen in NDR" 3-minute television feature a regional TV news channel 2004

## PUBLIC EXHIBITIONS OF RESEARCH, CREATIVE AND BUILT WORK

- "The Interlock House" Department of Energy's 2009 Solar Decathlon competition and public exhibition of an 800 sft solely solar powered house designed by ISU students under leadership of faculty adviser and principal investigator Ulrike Passe. 2009
- "The fluid dynamics of air flow in free flow open spaces: An architectural approach to energy efficient buildings"; by Ulrike Passe, Francine Battaglia. Exhibition of research projects

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| funded by the Boston Society of Architects at the 2008 AIA (American Institute of Architects) Annual National Convention in Boston. | 2008 |
| New members to the "Bund Deutscher Architekten" (BDA), Group exhibition, BDA Gallery Berlin   | 2006 |
| "Sustainable architecture for the future: Context," BDA Gallery Berlin, House Marxen  | 2006 |
| "DA! Year exhibition of the Berlin Architect's Institution: House Marxen," Stilwerk Berlin  | 2004 |
| German Open Day of Architecture, Architect's Chamber of Germany; House Marxen   | 2004 |

## INVITED LECTURES AND PRESENTATIONS

|  |      |
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| "Light, Sun, Air....A Modern Vision Come True: The Solar Decathlon Experience"<br>Nov, 16th, 2009: Public evening lecture by invitation of the AIAS, Department of Architecture at Bowling Green State University, Bowling Green, Ohio, USA.   | 2009 |
| "Designing Sensual Spaces" Invited lecture to ARTH 4400/5400 'History of Modern Architecture' on air flow in buildings, with a specific focus on the work of Alvar Aalto the Bowling Green State University, Bowling Green, Ohio, USA.   | 2009 |
| "The Interlock House as an Interface: Sustainability and Occupant Interaction"<br>Invited lecture in observance of World Usability Day 2009 "Designing for a Sustainable World" at the Usability Professionals Association, Iowa Chapter in West Des Moines.   | 2009 |
| "Simulation of natural ventilation flows possibilities for the restoration of the viipuri library ventilation system" Invited presentation of research findings to committee members of The Finnish Committee for the Restoration of Viipuri Library / Alvar Aalto Foundation at post-symposium tour to Vyborg / Viipuri Alvar Aalto Symposium Edge- Paracentric Architecture, Jyväskylä, Finland, August.   | 2009 |
| "Implementing energy evaluation and simulation tools into the design studio" Presentation at the Society for Building Science Educators (SBSE) Retreat: The leap to zero carbon in Quebec  | 2009 |
| "Integrating the Solar Decathlon into coursework at Iowa State University: A case study into interdisciplinary design education necessary to achieve net zero energy buildings." Presentation at the Society for Building Science Educators (SBSE) Retreat: The leap to zero carbon in Quebec  | 2009 |
| Sustainability Consortium of the City of Rock Island Rock Island, Illinois; Presentation of the Solar Decathlon Project to the Advanced Technology and, lead by the Major, March 24,   | 2009 |
| "Energy and Buildings: Doing more with less....and the sun." Invited keynote speaker at the National Smart Living Conference at Duke University as participant of the Duke Conversations program, April 3-5, 2009, Duke University, Durham N.C.  | 2009 |
| 'Sustainable conservation practices' International panel discussion at DOCOMOMO (Invited participant) panel chaired by Kyle Normandin of WJE Engineers, Architects and Material Scientists, USA, Other panelists: Susan MacDonald (Architect, Getty Conservation Institute, Los Angeles, USA), Tom Haartsen (Climatic Design Consult, Delft, The Netherlands), Uta Pottgiesser (Hochschule Ostwestfalen-Lippe, University of Applied Sciences, Hannover, Germany), Norman R. Weiss (Integrated Conservation Resources Inc.,USA) at the X. International DOCOMOMO Conference in Rotterdam NL. | 2008 |

## AWARDS

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| Iowa State University's Excellence in Sustainability Award or the Solar Decathlon Team  | 2010 |
| ISU College of Design Faculty Award for Extraordinary performance<br><i>"Ulrike Passe has assumed a key role in the architecture technology curriculum, increasing the emphasis on sustainable design principles and integrating her extensive "green" practice experience in Germany into the design studio. She is committed to interdisciplinary efforts. ... As the principal investigator for ISU's Solar Decathlon project, Ulrike has engaged with students and faculty across campus and throughout our College in the design and construction of a solar-powered house. ... Ulrike handles this ambitious range of projects with flexibility and humor. ..."</i> | 2009 |
| Hans-Schaefer-Prize (BDA-Berlin) for emerging architects practices in Berlin  | 1998 |

## SELECTED ARCHITECTURAL DESIGN PROJECTS (RELEVANT SELECTION)

|  |  |         |
|--|--|---------|
| Low-energy house in Marxen/Niedersachsen, completed  |  | 2001/04 |
| Loft refurbishment, energy conservation, extension of a furniture factory Berlin-Mitte; completed      |  | 2003    |
| "Ebbinghaus," energy efficient retrofit and extension of a listed modernist department store completed |  | 2003    |
| Interior for a vine-merchant in the old slaughterhouse district, Berlin, completed                     |  | 2001    |
| Loft refurbishment and energy conservation of a milk-laboratory  |  | 2001    |
| Preussischer Landtag Refurbishment into Berlin City Parliament completed                               |  | 1991    |
| B.Braun Melsungen, production facility for pharmaceutical products , completed                         |  | 1990    |

## PRIZE-WINNING COMPETITION ENTRIES (RELEVANT SELECTION)

|   |                     |      |
|---|---------------------|------|
| "Experimental Housing," Biesdorf-Süd; Berlin-Marzahn              | 2. Prize            | 1999 |
| Representational House for two States at the Federal Gov., Berlin | Hon. Recommendation | 1998 |
| Extension of University of Nürnberg                               | Hon. Recommendation | 1997 |
| Extension of a public bath in Potsdam                             | 2. Prize            | 1995 |
| Townplanning-Competition Brandenburg / Havel                      | Hon. Recommendation | 1995 |

## COURSES TAUGHT (SELECTION)

|   |      |            |
|---|------|------------|
| ARCH 402 Architectural Design (study abroad in Rome)  | Sp   | 2010       |
| ARCH 431 Analytical Drawing (study abroad in Rome)  | Sp   | 2010       |
| ARCH 528B Topical Studies in Architecture (Technology)                                      |      |            |
| Solar Decathlon public communication and jury presentation                                  | F    | 2009       |
| DSN S 445/546: Design Studies: Solar Decathlon Interdisciplinary Workshop and Studio        | F/Sp | 2008/09    |
| ARCH 458: Environmental Control Systems in Architecture                                     | F    | 2007/08/09 |
| ARCH 528b Topical Studies in Architecture: Energy modeling with Ecotect                     | Su   | 2008       |
| ARCH 401: Architectural Design V: Comprehensive Design Studio                               | F    | 2007       |
| ARCH 357: Environmental Forces in Architecture  | Sp   | 2007/08/09 |
| ARCH 506: Architectural Design II for Graduate Students                                     | Sp   | 2007/08    |
| ARCH 601: Advanced Architectural Design I for Graduate Students                             | F    | 2006       |
| ARCH 402: Architectural Design VI/ Rome Study Abroad Program                                | Sp   | 2006       |
| Berlin Study-Abroad Program, U. Kentucky: Building Technology & Professional Practice       | F    | 2002/2004  |
| Elective Advanced Architectural Design: Wide Span Steel Prototypes, TU Berlin               |      | 1998-1999  |
| Design Foundation, Building Technology, Climate Design and Professional Practice, TU Berlin |      | 1993-1998  |

## PROFESSIONAL LEADERSHIP, INSTITUTIONAL SERVICE AND AFFILIATIONS

|   |  |      |
|---|--|------|
| ISU Center for Excellence in the Arts and Humanities (CEAH) Committee to develop new grant structures based on new strategic plan |  | 2010 |
| ISU President's Committee for the organization of the Second Annual Sustainability Symposium                                      |  | 2010 |
| ISU Council of Sustainability Steering Committee Member   |  | 2009 |
| ISU College of Design Sustainability Consortium   |  | 2009 |
| Director, Iowa State University's Center for Building Energy Research (CBER)  |  | 2008 |
| ASHRAE, Associate Member  |  | 2009 |
| AIA, American Institute of Architects, International Associate  |  | 2008 |
| Chair of the Technology Committee of the Department of Architecture   |  | 2007 |
| Member to the Curriculum Committee of the Department of Architecture  |  | 2007 |
| Solar Decathlon Planning Team   |  | 2006 |
| Steering Committee, Green Design Research Collaborative (GDRC)  |  | 2006 |
| Bund Deutscher Architekten (equivalent to the College of Fellows of the AIA)  |  | 2005 |
| Head of the Jury for the Prize of German Steel 2004 announced by "Bauen mit Stahl"  |  | 2004 |
| Head of the Jury for the MSH-Prize for Steel Architecture 2002; Vallourec & Mannesmann  |  | 2002 |

## **IOWA STATE INTERNAL FUNDING**

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|---|------|
| Foreign Travel Grant to Helsinki, Finland and Vyborg, Russia meeting with Aalto Foundation  | 2009 |
| IPRT Company Assistance Seed Funding:<br>Prototype of biobased insulation based on the soy protein zein (Co-PI / PI: Muecke) (\$8,600).                 | 2009 |
| IPRT Company Assistance Seed Funding:<br>Monitoring Equipment Solar Decathlon House (PI/Co-PI: Nelson) (\$5,000).                                       | 2009 |
| Iowa State College of Design Faculty Enhancement Grant to set up the Solar Decathlon 2009 team  | 2007 |
| Foreign Travel Grant to present a research paper at a conference in Chennai, India (\$1621)   | 2007 |
| CELT TEACH Grant Center for Excellence in Learning and Teaching (\$1500)  | 2006 |
| Women Enhancement Mini – Grant, Iowa State U. to organize the lecture series,<br>“Women in Sustainable Design” (with Prof. Francine Battaglia) (\$3000) | 2006 |

## **GRANT WRITING ACTIVITIES (PENDING)**

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| NSF-EPSCOR "Harnessing Energy Flows in the Biosphere to Build Sustainable Energy Systems" (PI: Robert Brown, ISU and others) Passe selected as junior faculty participant in the Energy Efficiency Science Platform in Iowa wide \$20,000,000 proposal writing initiative.   | 2009 |
| NSF EFRI-SEED* preliminary proposal: "Multi-scale material and thermo-fluid computational models of sustainable buildings using efficient energy harvesting materials." (PI/Co-PI: K.Rajan, Zhi J. Wang, J, Shane/ Senior personel: Strong, Carriquiry, Fox (\$2,000,000 over 4 years)<br>*(SEED) Science in Energy and Environmental Design: Engineering Sustainable Buildings. | 2009 |

## **GRANT PROPOSAL SUBMITTED (NOT FUNDED)**

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| D.O.E. Data Center Efficiency "Ambient Air Cooling for Increasing Small Data Center Efficiency" (PI /w:Institute for Physical Research and Technology / Center for Physical and Computational Mathematics/ Co-PI: Harmon, Ajarapu, Perkins; Industry partners: Freese-Notis, Silicon Graphics International.) (Total budget: \$1,376,618) | 2009 |
| Expanded D.O.E. Programmatic Research through the Ames Laboratory:<br>"The Midwestern Building Systems and Materials Applications Research TestBed (MB SMART) (Co-PI/Lead-PI: Alex King, Director of The Ames Laboratory/ 2. Co-PI: Kevin Nordmeyer, Director Iowa Energy Center) (Total Budget: \$17,750,000)                            | 2009 |

## **SERVICE AS A REFEREE FOR JOURNALS, BOOKS, GRANTS, CONFERENCES (recent)**

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|---|------|
| Peer-reviewer for Solar 2010, Annual Conference of ASES (American Solar Energy Society).                | 2010 |
| Peer-reviewer of research proposals for the AAAS (American Association for the Advancement of Science). | 2009 |
| Peer-reviewer of research proposals for the BSA (Boston Society of Architects)                          | 2009 |
| Manuscript peer- reviewer for ASHRAE Transactions (major research publication of ASHRAE)                | 2009 |
| Associate Editor to the International Journal of Design Principles and Practices.                       | 2009 |
| Peer-reviewer for a session at the 2010 ACSA Annual Meeting in New Orleans.                             | 2009 |

The Center for Building Energy Research at Iowa State which I direct focuses on strategies to reduce energy consumption in buildings using effective building design and efficient and renewable energy sources and technologies. The Center supports interdisciplinary and collaborative research between disciplines such as architecture, agriculture, geological and atmospheric sciences, business, mechanical, construction and electrical engineering, material science and engineering as well as interior design, environmental psychology and behavioral science.