



ACEP

Alaska Center for Energy and Power



A BIG HEART FOR SMALL COMMUNITIES



RESEARCHER SHOWCASE

Daisy Huang

BACKGROUND

Dr. Daisy Huang is a mechanical engineer with a passion for making energy more affordable by accessing local renewable energy sources and increasing efficiency. Daisy 's perspective of energy costs was abruptly adjusted after moving from California to Fairbanks for graduate school. As Fairbanks has one of the highest heating requirements and costs of energy in the world, she suddenly found herself living on a tight “starving student” budget. Realizing the pressing need in Alaska and elsewhere for affordable and sustainable development of renewable energy technologies, Daisy has set her career on the path of finding useful applications for energy research.

Dr. Huang holds a joint position of ACEP Research Engineer and Assistant Professor of Energy in the Mechanical Engineering Department at the University of Alaska Fairbanks (UAF). She completed her PhD in mechanical engineering and applied physics at UAF in 2013. Previously Daisy was a mechanical design engineer in the Silicon Valley. She currently lives in a “dry-cabin” in Fairbanks with her 3 retired sled dogs and spends her free time skiing and hiking through the Alaska wilderness.

RECENT ENERGY PROJECTS

- Biomass Energy Sources
- High Voltage Direct Current Energy Transmission
- Organic Rankine Cycle Applications
- Wind Diesel Hybrid Power System
- Waste Heat Recovery
- Biomass Research Applications

RELEVANT PUBLICATIONS

D. Huang, C.S. Lin, G. Holdmann, V. Avadhanula, D. Light, T. Johnson, R. Coen. Green Machine Organic Rankine Cycle Field Test Final Report. Report for Alaska Energy Authority. 2014.

D. Huang, J. Meyer, R. Wies, S. Pathan, G. Holdmann. Small-Scale High Voltage Direct Current; A Lessons Learned Review of the Polarconsult HVDC Phase II Project with Recommendations for Future Research and Alaskan Application. Report for Denali Commission. 2013.

Using modeling to assess CO2 sequestration, engineering, environmental and economic issues related to a proposed coal-to-liquids plant in Interior Alaska. Report for U.S. Air Force Office of Scientific Research. 2013.

RESEARCH

Dr. Huang’s current work focuses on integrating intermittent renewables into islanded microgrids. The major challenge involves balancing the sometimes large shifts in generation and load that occur on small systems.

Daisy also has active research in waste heat recovery, co-firing of biomass with coal, and the practical applications of biomass research for Alaska’s remote communities.

Daisy is currently a tenure-track professor at UAF educating the future Alaska workforce in critical energy resources and technologies.

EDUCATION

- PhD Mechanical Engineering and Applied Physics. University of Alaska Fairbanks, 2013
- M.S. Mechanical Engineering. Santa Clara University, 2005
- B.S. Mechanical Engineering. University of California Berkeley, 1999

LEADERSHIP ROLES

- Faculty Adviser for The Society of Women Engineers



Fostering development of innovative solutions to Alaska's energy challenges through applied energy research at the University of Alaska.

The Alaska Center for Energy and Power (ACEP) is an applied energy research program based at the University of Alaska Fairbanks. ACEP provides leadership in developing energy systems for islanded, non-integrated electric grids and their associated oil-based heating systems. Integration is a central feature of our program. Because many of the issues related to implementing innovative energy solutions are complex, our program must not only address the technical integration of renewables with these small isolated diesel-based energy systems, but must also look at integration from a broader perspective: integration of solutions into the social realities of a community, integration of the cultural fabric into sustainable energy solutions, integration of university researchers across disciplines and with community partners; and integration of our facilities and resources with those of our national partners.

Our Mission: Develop and disseminate practical, cost-effective, and innovative energy solutions for Alaska and beyond.

Our Vision: Alaska leading the way in innovative production, distribution, and management of energy.

ACEP is a gateway for energy related activity at the University of Alaska. Working across campuses and pulling from the University's extensive resources and expertise, ACEP is interdisciplinary, needs-driven, and agile.

ACEP has also developed a wide range of partnerships outside the University at the local, state, national and international level to ensure research conducted through ACEP will be relevant, current and world class.

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