Kurt Lawrence Kornbluth, PhD
Adjunct Associate Professor,
Department of Biological and Agricultural Engineering
1605 Tilia
University of California, Davis, Davis CA, 95616
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EDUCATION

University of California, Davis
PhD, Mechanical Engineering, 2008
Dissertation Title: The Effect of Hydrogen Enrichment on Landfill Gas Combustion

San Francisco, State University
MS in Mechanical Engineering, 1997
Emphasis: Design and Environmental Engineering

Michigan State University
BS in Mechanical Engineering, 1987

PRIOR POSITIONS

UC Davis Energy Efficiency Center
Founder & Director, D-Lab & Program for International Energy Technologies (2008-Present)
Assistant Professional Researcher (2011-2013)

DEKA Research and Development
Design Engineer (2003-2004)

Whirlwind Wheelchair International
Director of Operations (1998-1999), Field Engineer (1994-2003)

San Francisco State University Industrial Assessment Center
Energy Efficiency Analyst (1993-1994)

TEACHING EXPERIENCE

University of California, Davis (2009-Present)
ABT 298-A: D-Lab Food and Health (2016)
ABT 298-006: D-Lab I, "Feasibility Studies in Energy and Development" (2009-present)
ABT 298-007: D-Lab II, "Designing for the Market" (2009-present)
ABT 212, "A Path to Zero-Net Energy" (2012-present)
SAS 121, "Global Poverty: Critical Thinking and Taking Action" (2010-2018)
US/Denmark Renewable Energy course (2010-2016)
UC Davis Mandela Washington Fellowship Program (2016-2018)

Tokyo University of Agricultural Technology, Fushu, Japan (2015)
"Modeling Zero Net Energy in Japan, Denmark, and California"

Massachusetts Institute of Technology (2005-2006)
Sp 711 "D-Lab Development"
Sp 712 "D-lab Design"

PUBLICATIONS

1. Steve Wirydinata, Josh Morejohn, **Kurt Kornbluth**, "Pathways to Carbon Neutral Energy Systems at the University of California", Davis, Renewable Energy, January 2019, vol. 130, pages 853-866.

2. Yingying Zheng, Bryan Jenkins, **Kurt Kornbluth**, Alissa Kendall, and Chresten Traeholt. "Optimal Design and Operating Strategies for a Biomass-Fueled Combined Heat and Power System with Energy Storage", Energy, 15 July 2018, vol. 155, pages 620-629.

3. Yingying Zheng, Bryan Jenkins, **Kurt Kornbluth**, and Chresten Traeholt, "Optimization under Uncertainty of a Biomass-Integrated Renewable Energy Microgrid with Energy Storage", Renewable Energy, August 2018, vol. 123, pages 204-217.

4. Naman S. Benday, Daniel M. Dryden, **Kurt Kornbluth** and Pieter Stroeve, "A temperature-variant method for performance modeling and economic analysis of thermoelectric generators: Linking material properties to real-world conditions", Applied Energy, 2017, vol. 190, issue C, 7, pages 64-771.

5. **Kurt Kornbluth**, Colin Mickle, and Kelly Hestmark, "Modeling the Prospects of Plug-In Electric Buses to Reduce GHG Emissions and Cost While Meeting Route Demands: A Case Study of the "Unitrans" Bus Fleet Serving the Davis, California Urbanized Area". Smart Grid and Renewable Energy, 2016, vol. 7, 164-173.

6. Steven Wiryadinata, Mark Modera, Bryan Jenkins, **Kurt Kornbluth**, "Technical and economic feasibility of unitary, horizontal ground-loop geothermal heat pumps for space conditioning in selected California climate zones". Energy and Buildings. Volume 119, 1 May 2016, Pages 164-172, ISSN 0378-7788

7. Magdalena Brum, Paul Erickson, Bryan Jenkins, **Kurt Kornbluth**, "A comparative study of district and individual energy systems providing electrical-based heating, cooling, and domestic hot water to a low-energy use residential community". Energy and Buildings. Volume 92, 1 April 2015, Pages 306-312, ISSN 0378-7788

8. **Kurt Kornbluth**, Jon Cook, and Paul Erickson, "A More Renewable-Friendly Electrical Grid: Thermal Storage Refrigeration for Demand Response in California and Denmark". Smart Grid and Renewable Energy Vol 3, November 2012.

9. **Kurt Kornbluth,** Bryan Pon, and Paul Erickson, "An investigation of the cost and performance of a LED/Solar light designed as an alternative to candles in Zambia: A World Bank project case study". Renewable and Sustainable Energy Reviews, volume 17, issue 9, pages 6737-6745, December 2012.

10. **Kurt Kornbluth**, Jason Greenwood, Zach McCaffrey, and Paul Erickson, "Economic feasibility of hydrogen enrichment for reducing NOx emissions from landfill gas power generation: A comparison of the levelized cost of electricity with present strategies". Energy Policy, Volume 41, February 2012, Pages 333–339.

11. James Stiling, Simon Li, Pieter Stroeve, Jim Thompson, Bertha Mjawa, **Kurt Kornbluth**, and Barrett, Diane; "Enhanced Fruit Solar Drying Using Concentrating Panels". Energy for Sustainable Development, Volume 16, March 2012, pages 224-230.

12. **Kurt Kornbluth**, Jason Greenwood, Zach McCaffrey, Dave Vernon, and Paul Erickson, "Extension of the lean limit through hydrogen enrichment of a LFG-fueled spark-ignition engine with emphasis on NO_x reduction. International Journal of Hydrogen Energy, Volume 35, Issue 3, February 2010, Pages 1412-1419.

13. **Kurt Kornbluth**, Zach McCaffrey, and Paul Erickson, "Incorporating in-cylinder pressure data to predict NOx emissions from spark-ignition engines fueled with landfill gas/hydrogen mixtures". International Journal of Hydrogen Energy, Volume 34, Issue 22, November 2009, Pages 9248-9257.

14. **Kurt Kornbluth,** Ryohei Hinokuma, Evan Johnson, and Zach McCaffrey, "Optimizing wind energy for a small hybrid wind/diesel grid in the Galapagos Islands". Cape Peninsula University of Technology Domestic Use of Energy (DUE) Conference Journal, 2009.

15. Shazahda Chowdury and **Kurt Kornbluth** "A Study on the Stirling generator: Producing bioelectricity in Bangladesh", Daffodil International University Journal of Science and Technology, 2006, Vol 1.

16. **Kurt Kornbluth** and Philip Osafo-Kwaako, "Challenges in the implementation of appropriate technology projects: The case of the DISACARE Wheelchair Center in Zambia". 2005 National Academy of Engineering U.S. Frontiers of Engineering (USFOE) Reports on Leading-Edge Engineering Symposium, pages 37-44.

17. **Kurt Kornbluth**, Andrew F. Burke, Geoff Wardle, and Nathan Nickell, "Design of a freeway-capable narrow lane vehicle", Society of Automotive Engineers Technical Paper Series, (2004-01-0760). Received Best Paper Award from the Society of Automotive Engineers.

18. **Kurt Kornbluth**, "The High Stability Omni-wheelchair". 1996 Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Journal of Proceedings, Vol 16, pages 472-474.

RELEVANT GRANTS

Principal Investigator, D-Lab/Horticulture Innovation Lab Initiative: Advancing Horticulture Technologies through Design, Education, and Outreach. UC Davis Horticulture Innovation Lab, 2017, $60,000

Co-Principal Investigator, *Foundation for Food and Agricultural Research,* A novel desiccant system enables energy-efficient drying to reduce postharvest loss of agricultural commodities and foods, 2017-2021, $2,000,000.

Principal Investigator, *UC Davis Zero-Net-Energy Initiative,* UC Davis Energy Conservation Office, 2013-2019, $430,000.

Principal Investigator, *Sharing Knowledge for Rural Development in Georgia: A Partnership between the UC Davis D-Lab, and Tbilisi State University*, Global Affairs Seed grant, 2017, $23,000.

Principal Investigator, *Dry Chain Pilot Project*, UC Davis Innovation Institute for Food and Health, 2017-2018, $50,000.

Co-Principal Investigator, *Low Cost Carbon Uptake Remote Sensing System and D-Lab Training Module* CITRIS, 2017, $60,000.

Principal Investigator, *D-Lab/Horticulture Innovation Lab Regional Center Capacity Building*. UC Davis Horticulture Innovation Lab, 2017, $50,000

Principal Investigator, *UC Davis D-Lab*. UC Davis Blum Center, 2013-2017, $160,000.

Principal Investigator, *International Development Innovation Network.* USAID, 2013-2017, $770,000

Principal Investigator, *UC Davis Climate Champion,* University of California, Office of the President, 2016, $30,000.

Co-Principal Investigator, *Partnership for International Research and Education (PIRE),* National Science Foundation, 2011-2016, $1,440,000.

Principal Investigator, *D-Lab/Horticulture Innovation Lab Regional Center Capacity Building and Coolbot Promotion*. UC Davis Horticulture Innovation Lab, 2015, $50,000.

Co-Principal Investigator, *2015 Solar Decathlon,* US Department of Energy, 2014, $50,000.

Principal Investigator, *UC Davis D-Lab/HortCRSP Innovation Center*. UC Davis HortCRSP, 2012-2013, $128,000.

Principal Investigator, *UC Davis/Chevron Qatar Academy for Energy Efficiency*. Chevron, 2012, $144,000.

Principal Investigator, *UC Davis D-Lab*. UC Berkeley Blum Center, 2012, $48,000.

Principal Investigator, *Lighting the Way: Delivering Affordable, Safe, Incremental Lighting to Poor Households.* Blum Center for Developing Economies, 2010, $35,000.

Principal Investigator, *Lighting the Way: Implementing Low-cost LED Lighting in Zambia*. World Bank Lighting Africa Development Marketplace, 2008, $200,000.

Co-Principal Investigator, *UC Davis Program for International Energy Technologies.* National Collegiate Inventors and Innovators Alliance (NCIIA) Program Grant, 2008, $48,000.

Co-Principal Investigator, *The Use of Thermal Storage Refrigeration to Lower Peak Demand and Optimize Renewable Energy Resources*. University of California Energy Institute (UCEI), 2008, $35,000.

Principal Investigator, *Load Leveling of Renewable Energy in the Galapagos Islands*. University of California, Davis ITS Friends student award, 2006, $9,000.

Hydrogen Enrichment for Enhanced Combustion of Landfill Gas. Energy Innovation Small Grants (EISG), 2006, $95,000.

The Role of Hydrogen in Landfill Gas Utilization. California Integrated Waste Management Board (CIWMB), 2005, $50,000.

AWARDS and FELLOWSHIPS

IREX Reciprocal Engagement Award, 2018

University of California, Davis "Faculty Assistant to the Dean of Engineering", 2018-2019.

University of California, Chancellors "Global Engagement Award", 2017.

University of California, Office of the President "Faculty Climate Champion", 2016.

University of California, Davis Graduate School of Management Business Development Fellow, 2006.

National Academy of Engineers Frontiers of Engineering "Young Outstanding Engineer", 2005.

National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) fellow, 2003 & 2004.

Rehabilitation Engineering Society of North America (RESNA) Student Design Award, 1996.

CONFERENCE PRESENTATIONS

"Project Oriented, Client Focused, Interdisciplinary Learning at UC, Davis", First Latin-American Congress in Interdisciplinary Research and Education, University of the Republic, Montevideo, Uruguay. Invited Speaker, September 18, 2016.

"Zero-Net-Energy and Climate Neutrality at UC Davis: A project-based approach to research and education", Tokyo University of Agricultural Technology, Fushu, Japan. Invited Speaker, November 20, 2015.

"A Project-Based Multidisciplinary Approach to Sustainable Communities", Aalborg University Department of Planning, Aalborg, Denmark. Invited Speaker, September 5, 2015.

"A Path to Zero Net Energy at UC Davis", Aalborg Conference on Microgrids, Aalborg University, Aalborg, Denmark. Invited Speaker, August 28, 2015.

"Update on Lighting the Way Zambia". World Bank Lighting Africa Conference, Safari Lodge Hotel, Nairobi, Kenya. Invited Speaker, May 18, 2010.

"PIET: Building a heuristic, interdisciplinary program focused on commercializing clean energy technologies in the developing world". 2010 National Collegiate Inventors and Innovators Alliance (NCIIA) Conference, San Francisco, CA. March 25, 2010.

"Lighting the Way Zambia". International Development Design Summit, (IDDS), Kwame Nkrumah University of Science and Technology (KNUST) Technology Consultancy Centre (TCC), Accra, Ghana, August 7, 2009. Invited Speaker.

"Optimizing wind energy for a small hybrid wind/diesel grid in the Galapagos Islands". Domestic Use of Energy (DUE) Conference Proceedings, Cape Peninsula University of Technology, Cape Town, SA, May 20, 2008. Keynote Speaker.

"Design for Development". International Development Design Summit, (IDDS), Massachusetts Institute of Technology, Cambridge Massachusetts, August 2008. Invited Speaker.

"Report on hydrogen enrichment of landfill gas, California Integrated Waste Management Board (CIWMB) Workshop on Hydrogen Utilization in Landfill Gas, CalEPA Building, Sacramento, CA October 31, 2006.

"Challenges in the implementation of appropriate technology projects: The case of the DISACARE Wheelchair Center in Zambia". 2005 National Academy of Engineering US Frontiers of Engineering (USFOE) Symposium, September 2005. Invited Speaker.

"Design of a freeway-capable narrow lane vehicle", Society of Automobile Engineers (SAE) World Congress, Detroit, Michigan, March 2004.

PATENTS

Biogas Burner for Stirling Engine, (WO/2005/108865) GASEOUS FUEL BURNER