

Christopher Wark

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Areas of Expertise

- 28 years of multi-disciplinary, energy-related engineering experience
- 14 years in engineering research and development
- 14 years' experience conducting building energy and computational fluid dynamics (CFD) analysis
- 6 years of business development experience advancing green building products and services

CAREER SUMMARY

Principal – Wark Energy Consulting

4/2008 – present

- Whole-building energy modeling for Rumsey Engineers (2008 – 2009)
Projects included SF Exploratorium, Cal Poly Ctr for Science, 3 office buildings, and 2 private homes
- CFD modeling and analysis for Integral Group (2009 – 2010)
Projects included the Wyoming NCAR super computer and 50 UN Plaza Federal Building, SF.
- LEED certification consulting for BuildingWise LLC and Integral Group (2008 – 2009)
 - Support for 5 LEED-NC Platinum projects in Northern California
 - LEED-EB evaluations for 9 properties in Northern and Southern California
 - Created the Semiconductor Green Fab LEED Application Guide for Sematech
- Modular planter system development with Guiyang Chuangjia High-Tech Accelerator Co. (2009 – 2010)
Partnership to develop and market specialized planter systems in Guiyang, China.

Associate – Buro Happold Engineering (www.burohappold.com)

6/2014 – 4/2016

- Technical Manager of the NY Analytics team: supervise energy modeling and specialized site analysis on 27 different projects, including 11 projects targeting LEED Gold or Platinum.
- Conducted CFD modeling on 7 projects covering a broad range of applications including comfort, infiltration, contaminant tracking, fire risk, condensation risk, and energy savings.
- Conducted whole-building energy modeling using eQUEST, IES-VE and OpenStudio EnergyPlus.
- Advised in-house engineering teams, as well as client design teams, on building physics, optimization of architectural and mechanical designs for energy and comfort, and code/certification requirements.
- Organized region-wide Task Teams that address current Analytics technical and business issues.

Associate – WSP USA (www.wsp.com)

12/2011 – 6/2014

- Conducted whole-building energy modeling using eQUEST. Projects included 10 mixed-use residential and hotel buildings, 8 office buildings, 3 educational facilities, 3 manufacturing/warehouse facilities.
- Conducted CFD modeling on 3 projects, including an under-floor ventilation study for the UN Consolidation Building and comfort analyses for 2 residential projects.
- Provided mechanical design recommendations to in-house engineers and work with clients to improve energy efficiency of integrated design features.
- Prepared LEED EA credits for 15 projects and NYSERDA incentive documentation for 8 projects.

Senior Energy Analyst – Viridian Energy & Environmental (www.vidaris.com) **1/2010 – 6/2012**

- Conducted whole-building energy modeling using DOE-2.1e and eQUEST. Projects included 6 mixed-use buildings, 3 residential buildings, and 4 educational facilities in the New York City area.
- Conducted CFD modeling on 5 projects, including the Poff Roanoke Federal Building, Case Western Field House, and the new Whitney Museum of American Art.
- Provided advanced calculations for energy recovery, carbon credit, and solar PV studies on 6 projects.
- Conducted window replacement energy cost studies for Rockefeller Center and Olympic Tower.
- Prepared LEED EA credits for 8 projects and NYSERDA incentive documentation for 5 projects.

Technical Sales Manager – Mentor Graphics Mechanical Analysis Division **1/2005 – 3/2008**

- Responsible for all North American business development and applications engineering of FloVENT, a CFD analysis and design software package for energy and air quality optimization.
- Tripled customer base and reduced average sales cycle from 24 to 6 months through strategic initiatives. Salesman of the Year 2006 and 2007.
- Created and implemented downloadable software demonstrations of various application examples, including: data centers, hospitals, toxic aerosol release, houses, offices, and exterior flow analysis.
- Primary consultant on 3 major projects, providing energy and indoor air quality analysis of facilities for Safeway Inc., Parker-Hannifin Racor, and a major pharmaceutical company. Each project resulted in the design elimination of 30-50 local circulation and cooling fans.
- Invited guest lecturer and course mentor on 2 architectural design projects at Stanford University.
- Created a white paper and presented a webinar on natural ventilation. Authored article published in an architectural journal on the optimization of a LEED Gold student housing project.

Principal – SHADE Consulting, LLC **5/2002 – 4/2005**

- Established an architectural consulting firm specializing in eco-roof and green roof design and analysis.
- Provided whole-building and roof system thermal analysis using proprietary software, design consulting, and product specification for feasibility studies. 4 design programs were implemented. Clients included: [The City of New York](http://www.cityofnewyork.org), atelier ten, Earth Pledge, City of Chicago, City of Portland, OR
- Created a novel computer model describing heat transfer through vegetated roof systems. Developed and marketed an energy and cost assessment computer program based on the model.
- Designed and marketed 4 unique rooftop container systems. Applied for 3 separate patents.
- Presented at 5 conferences for organizations including the AIA, USGBC, and CSI. Published 2 articles.
- Became a LEED Accredited Professional (LEED-AP).

Research Engineer – Caterpillar Inc., Technical Services Division **7/1998 – 5/2002**

- Conducted research and feasibility analysis of various hydrogen fuel cell technologies.
- Directed fuel systems research in Advanced Engines and Fuel Systems, Engine Research.

Research Associate – STI Optronics, Bellevue, WA **9/1989 – 8/1996**

- Mechanical and electronic engineering support for advanced laser system development.

EDUCATION

- MS Mechanical Engineering** - Washington State University, Pullman, WA 5/1998
Thesis: Fuel droplet transport and the combustion zones in an acoustically-forced reacting jet.
TA positions: Intro to Thermodynamics; Fluids and Heat Transfer Projects Lab
- BS Mechanical Engineering** - Washington State University, Pullman, WA 5/1996
Major: Mechanical Engineering - Emphasis in Energy Systems
Minor: Material Science Engineering
- AAS Electronics Technology** - College of DuPage, Glen Ellyn, IL 6/1986

PUBLICATIONS

- Greenroofs.com Energy Editor. Presented a 7-part series on concepts of heat transfer through vegetated roof systems: "[Cooler Than Cool Roofs: How Heat Doesn't Move Through a Green Roof](#)" (2011) plus two other articles related to green roofs and energy.
- "Leading to LEED: Software Used to Design a University Residence Helps Achieve LEED Gold"
Metal Architecture March, 2008
www.metalarchitecture.com/Default.aspx?PublicationID=3&ArticleID=192&Title=Leading+to+LEED%3a+Software+Used+to+Design+a+University+Residence+Helps+Achieve+LEED+Gold
- "What is the "Q" Value of Your Green Roof?"
Green Roof Infrastructure Monitor April, 2004
www.greenroofs.org/pdf/GRIM-Spring2004.pdf
- "Green Roof Specifications and Standards: Establishing an Emerging Technology."
The Construction Specifier August, 2003
www.greenroofs.com/pdfs/newslinks-803_construction_specifier.pdf

RELEVANT CONFERENCE PRESENTATIONS

- ASME Energy Sustainability 2007, Long Beach
- Build Pittsburgh (American Institute of Architects), invited, 2004
- The CSI Show (Construction Specifications Institute) 2004, Chicago
- New Roofs for a New Century, invited, 2004, New York
- GreenBuild (US Green Building Council) 2003, Pittsburgh
- Green Roofs for Sustainable Communities (Green Roofs for Healthy Cities), invited, 2003, Chicago

MEMBERSHIPS

- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- NYC Urban Green Council
- US Green Building Council (USGBC)