

# energysmiths

P.O. Box 194 Meriden, NH 03770

603-469-3355; 603-469-3855 fax; [marc@energysmiths.com](mailto:marc@energysmiths.com)

## Integrated Systems Design – An Overview of Background and Experience

*Marc Rosenbaum, P.E.* uses an integrated systems design approach to help people create buildings and communities which connect us to the natural world, and support both personal and planetary health. He brings this vision, experience and commitment to a collaborative design process, with the goal of profoundly understanding the interconnections between people, place, and systems that generate the best solution for each unique project. Design practiced at its highest level goes beyond efficiency and conservation to create places that regenerate and nurture the natural world and all of its inhabitants.

Energysmiths was founded in 1979 on the principle that sustainable communities can only be based on renewable resources. Marc has focused on integrating renewable energy systems, daylighting, high performance envelope design, health-sustaining mechanical systems, food production and storage, ecological waste systems, efficient electrical and water systems, and benign, resource-efficient materials selection into his projects. Having realized that the barriers to high performance buildings and communities are neither technical nor economic, his work scope has expanded to assist clients design the *process* that is necessary to create these high performance projects.

Projects of his have won awards from the Northeast Sustainable Energy Association (NESEA – four times a winner), ASHRAE (twice a winner), and the Energy Efficient Building Association (EEBA). Two of his projects have been on the American Institute of Architects (AIA) Earth Day Top Ten list. The French Wing for the Society for the Protection of NH Forests earned a LEED™ Gold certification, the first LEED™ certified project in New England.

In his practice of sustainable design consulting, he has worked for institutional clients such as MIT, Vermont Law School, Yale, Dartmouth College, Cambridge School of Weston, and Middlebury College; non-profit clients such as the Society for the Protection of NH Forests and the Woods Hole Research Center; commercial clients such as Stonyfield Farm, Inc., Tom's of Maine, and the Hanover Consumer Co-op; cohousing groups such as Pioneer Valley, Pine Street, Island Cohousing, Peterborough, Cobb Hill, and Alchemy Farm; and with many architects including William McDonough Architects, Tsoi/Kobus, Solar Design Associates, Bruner Cott Associates, Banwell Architects, Moore Ruble Yudell, and Payette Associates.

He has been published in *ASHRAE Journal*, *Fine Homebuilding*, *Northeast Sun*, *Solar Today*, *Journal of Light Construction*, and *Northwest Builder*, and is a member of the Advisory Board of *Environmental Building News*.

He is a frequent speaker on sustainable design and has been a featured presenter at many conferences, with audiences that include architects, engineers, construction professionals, facilities managers, planners, educators, utility professionals, and those working in the public sector.

An experienced and enthusiastic teacher, he has trained thousands of professionals and especially enjoys working with students. He holds BS and MS degrees from MIT, where he studied mechanical engineering. He is a licensed engineer in NH, VT, MA, and ME, and is a LEED Accredited Professional, certified by the U.S Green Building Council.

## **energysmiths**

P.O. Box 194 Meriden, NH 03770

603-469-3355; 603-469-3855 fax; marc@energysmiths.com

### **Integrated Design Consulting Services**

**Marc Rosenbaum, P.E.**

My integrated consulting practice focuses on environmentally sound buildings, creating projects that are safe and healthy, comfortable, durable, and resource efficient. Good environmental design starts with an integrated systems approach. Areas in which my expertise may be helpful include:

- helping organizations build a united vision of what it is they want to accomplish
- contributing whole systems thinking to a sustainable master planning process
- setting environmental goals, objectives, and performance metrics
- assembling a architect/engineering/construction team capable of achieving the agreed-upon goals and metrics
- helping to create a design/construction process to achieve the environmental goals
- identifying and managing risk in new approaches and technologies
- deep energy retrofits of existing buildings
- biophilic design
- user-friendly design
- siting for solar utilization and other sustainable systems
- reducing site impact and utilizing site resources
- building envelope detailing for durability and airtightness
- energy efficient construction strategies, insulation choices, types and levels
- healthful materials
- resource efficient materials (local, recycled content, low embodied energy)
- ventilation system strategies and heat recovery
- heating and cooling system strategies
- daylighting and energy efficient lighting
- minimizing electrical demand and mechanical parasitic energy use
- glazing types, quantities, orientation
- computer energy use modeling to optimize energy investments
- passive solar design
- solar domestic hot water systems and/or graywater heat recovery
- active and/or hybrid solar space heating
- wood-fired space heat and hot water
- solar greenhouse design
- waste treatment strategies, especially composting toilets and graywater treatment
- root cellars, low energy refrigeration, solar food drying
- water conservation
- multiple user mechanical systems and/or district heating
- cogeneration of heat and electricity
- solar electricity

Careful attention to these areas will accomplish the goals of a safe and healthy, comfortable, and durable building, and will greatly improve user satisfaction and resource efficiency over typical construction at modest cost. My efforts here should produce savings, helping you allocate your resources in the best way possible.

## **MARC ROSENBAUM, P.E.**

P.O. Box 194 Meriden, New Hampshire 03770 (603) 469-3355 marc@energysmiths.com

### **Professional Certification**

**Licensed Professional Engineer** in Mechanical Engineering and HVAC.

Licensed in New Hampshire, Vermont, Maine, and Massachusetts.

**LEED Accredited Professional** - U.S. Green Building Council, 4/2001

### **Awards/ Recognition**

**2000 ASHRAE Technology Award First Place**

**2001 ASHRAE Technology Award Second Place**

**2000, 2004, 2008 AIA Earth Day Top Ten Project**

**1992, 1996, 2000, 2003, 2004 - Sustainable Design Award** - Northeast Sustainable Energy Assoc.

**1991 Best Energy Efficient House Design Award** - Energy and Environmental Building Assoc.

**Energysmiths**, Meriden, NH - 1979 - to present

Principal and founder. Provides integrated systems approach to creating environmentally sound, solar, resource efficient buildings and communities. Services include:

#### **• Consulting**

Integrated design process design, sustainability goals and metrics, sustainable design strategies, solar utilization, energy-efficient design and construction, healthy building design and construction, energy use analysis and computer modeling, ventilation and moisture issues, indoor air quality, resource efficient materials, and energy conservation strategies to architects, builders, utilities, government agencies, home manufacturers, cohousing groups, and building owners and operators.

#### **• Education**

Workshops, training, courses, and articles on topics listed above.

### **Education**

**Massachusetts Institute of Technology** Cambridge, MA

**Master of Science**. Thesis entitled, "Preliminary Analysis of Methods for Governing a Darrieus Windmill," Sept. 1975.

**Massachusetts Institute of Technology** Cambridge, MA

**Bachelor of Science** in Mechanical Engineering. Thesis entitled, "Design and Construction of an Ultralight Track Bicycle," June 1974.

### **Publications**

Articles in *ASHRAE Journal*, *Fine Homebuilding*, *Journal of Light Construction*, *Solar Today*, *Northeast Sun*, *Northwest Builder*, and *Bicycling!* on topics including sustainable design solutions, integrated architectural/engineering design approach, solar hot water systems, active solar buildings, low cost energy efficient construction techniques, low cost ventilation systems, computer energy analysis tools, blower doors, troubleshooting building failures, and very lightweight bicycles.

### **Speaker/Trainer**

Developer/presenter Towards Zero Net Energy Homes workshop, Nuts and Bolts of Superinsulation workshop; Trainer for Utility-sponsored energy efficient construction workshops in CT, MA, NH, and RI. Conference keynote speaker for NESEA's Building Energy and Affordable Comfort; Speaker for USGBC, PassiveHouse USA, Build Boston, AIA NH, AIA VT, AIA CT, NAHB National Conference, NESEA Building Energy Conference, American Solar Energy Society Annual Conference, World Conference on Innovative Housing, EEBA Excellence in Housing Conference, Timber Framers of North America Conference, Building With Value '93, VT Contractor's Conference, Energy Association of NH, Montshire Museum of Science, Eastern North America Permaculture Conference. Certified to teach Passive Solar Design by the Passive Solar Industries Council.

**Organizations**

Lifetime Member - Northeast Sustainable Energy Assoc.; American Solar Energy Society; ASHRAE; Environmental Building News (Advisory Board member).

**Activities**

Designed and built own home - features include passive solar and wood-fired space heat and domestic hot water, solar greenhouse, utility-interactive solar electricity, root cellar, low energy use lighting, heat recovery ventilation, raised bed organic garden, and low water use fixtures.