
SUSTAINABILITY RESEARCH
at the
Energy Studies in Buildings Laboratory
University of Oregon

G.Z. Brown, Professor of Architecture

Oregon **BEST FEST '09**
September 14 | Portland, Oregon



HOW DOES SUSTAINABILITY RESEARCH CONTRIBUTE TO OREGON?

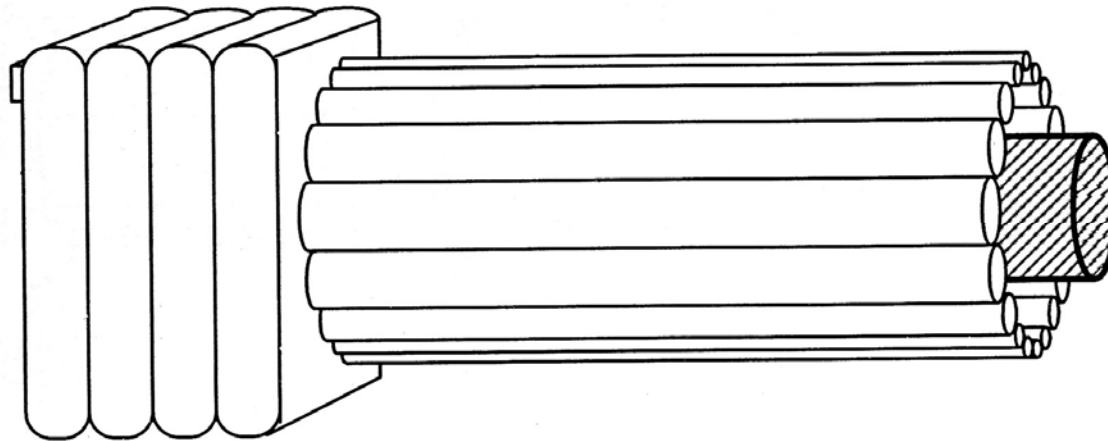
- Creates new products for existing and start-up Oregon companies in the sustainability market.
- Increases the profitability of Oregon businesses.
- Increases the size and quality of Oregon workforce.
- Enhances the competitiveness of engineering and architectural firms.

NEW PRODUCTS

HEAT EXCHANGER

Problem: Energy losses occur when incoming ventilation air has to be heated or cooled to comfortable temperatures.

Solution: A low-cost heat exchanger uses attic spaces, crawlspaces, or spaces above dropped ceilings to warm (or cool) incoming ventilation air from outgoing air.

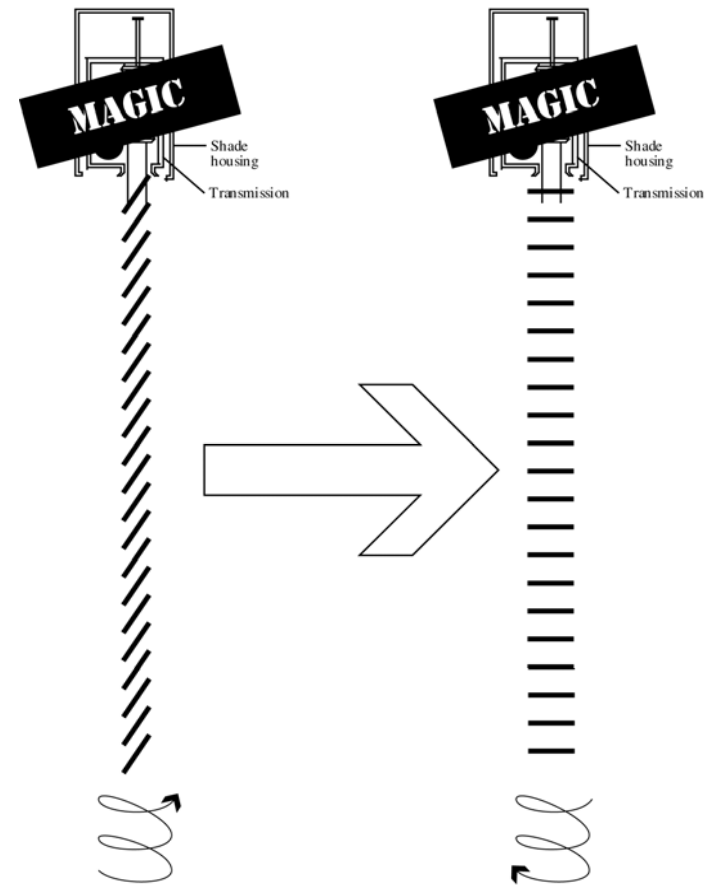


NEW PRODUCTS

SHADE CONTROLS

Problem: Shades are adjusted in the morning (or when glare occurs) and then remain in that position indefinitely.

Solution: Shade control snaps back to open position after a determinate time interval



NEW PRODUCTS

ON-GRADE FLOOR AND FOUNDATION SYSTEM

- An \$895 savings over a slab-on-grade foundation, the least expensive floor and foundation system currently available (20' x 32' test floor).
- Floor meets or exceeds conventional concrete or wood standards for levelness, flatness and deflection.
- Superior energy performance.
- Easy to disassemble, reuse or recycle.
- More comfortable for standing than a concrete floor.



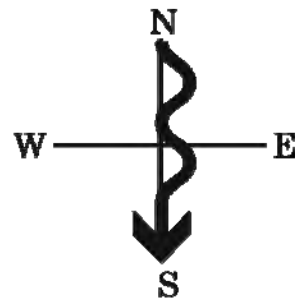
INCREASING PROFITABILITY

NATURAL VENTILATION









Wind and Shade Conditions at 9 a.m. on the Equinox

Wind Direction



Desirable Conditions

	Sun	Shade
Wind	 	 
Lee		

Wind Key: increased  reduced

INCREASING PROFITABILITY

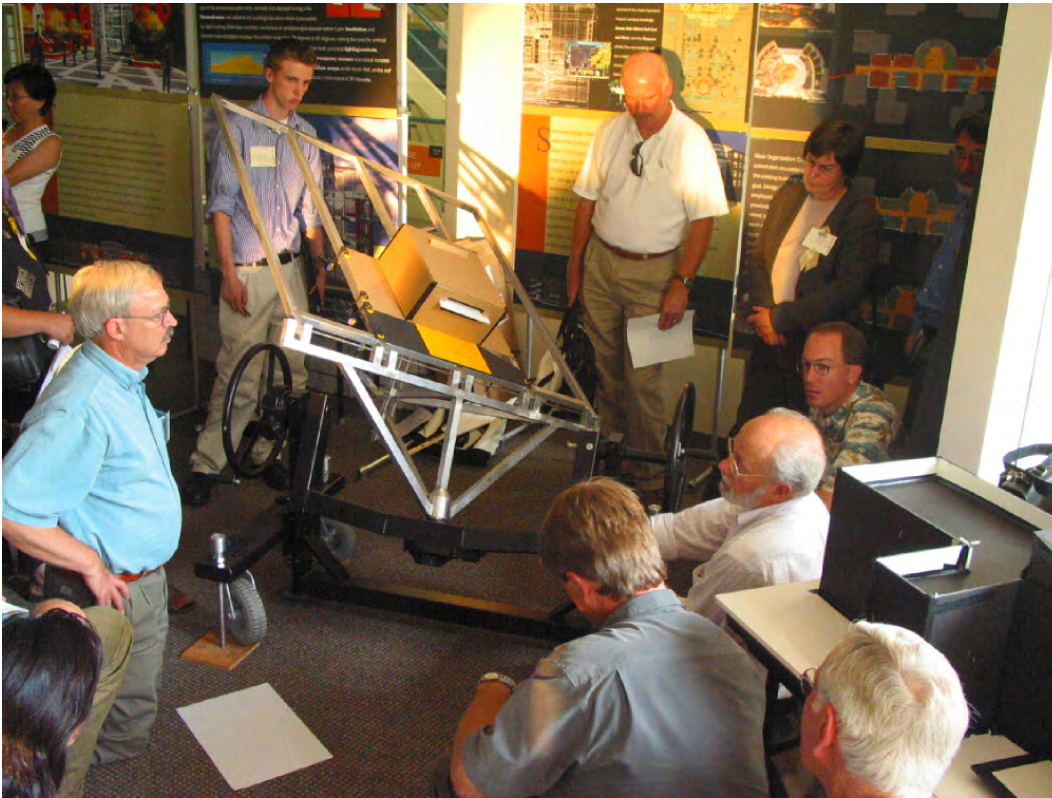
DAYLIGHTING



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ENRICHING THE WORKFORCE EDUCATION



- 2 laboratories in Portland and Eugene.
- 8 – 20 employees, depending on funding.
- \$14 million in research and development funding.
- 147 consulting projects for 87 firms, totaling over 16 million square feet.

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ENHANCING COMPETITIVENESS

MT. ANGEL THEOLOGICAL STUDIES CENTER

SRG Partnership

Lighting Synergies

- Shift occupancy schedule to use daylight.

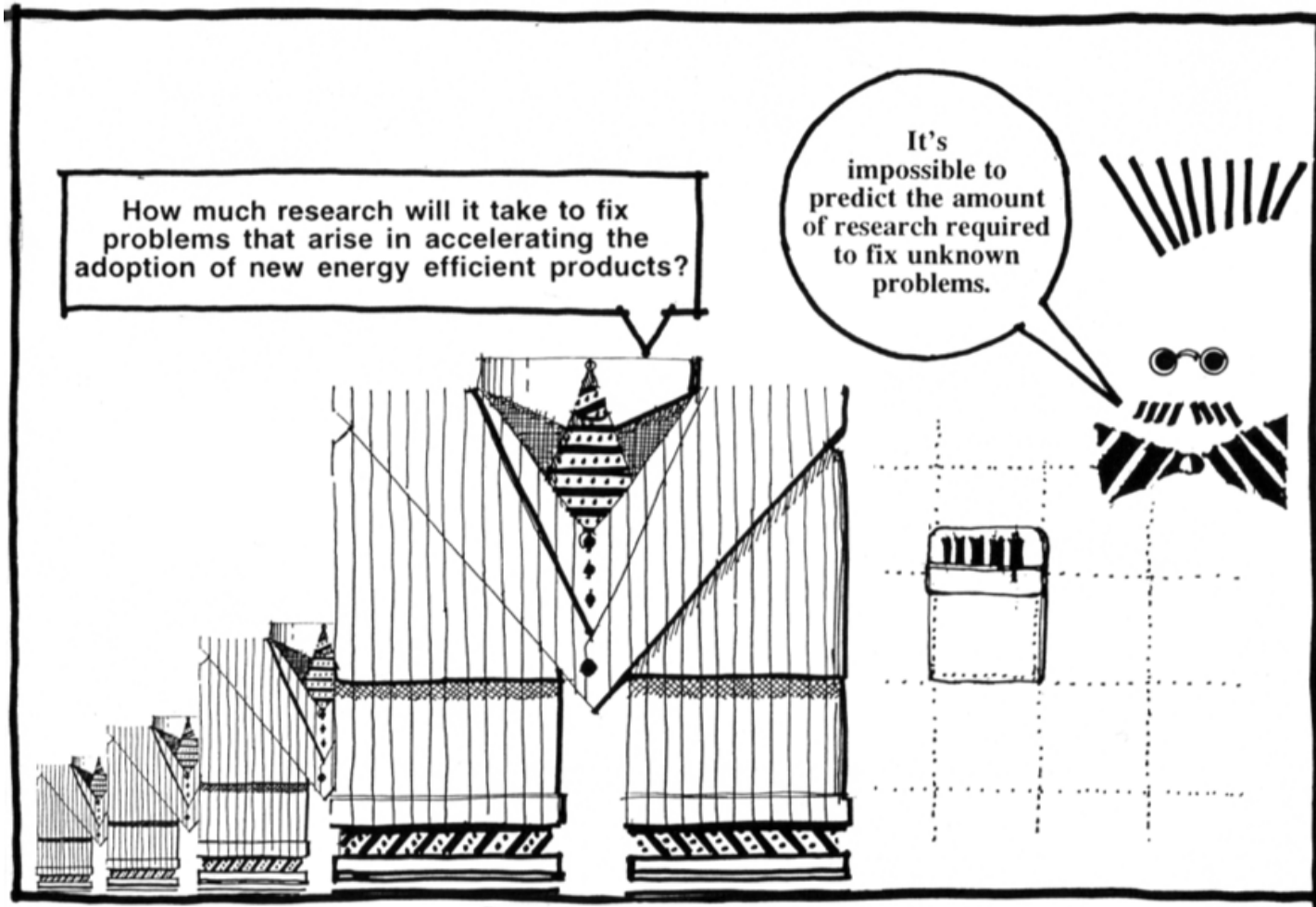
Heating Synergies

- Heat exchanger, insulation and thermal mass allow heating loads to be met by the occupants and a small hydronic system.

Cooling Synergies

- Nine month schedule.
- Night ventilation of mass – no mechanical cooling.
- Ceiling fans to expand comfort zone





Manager

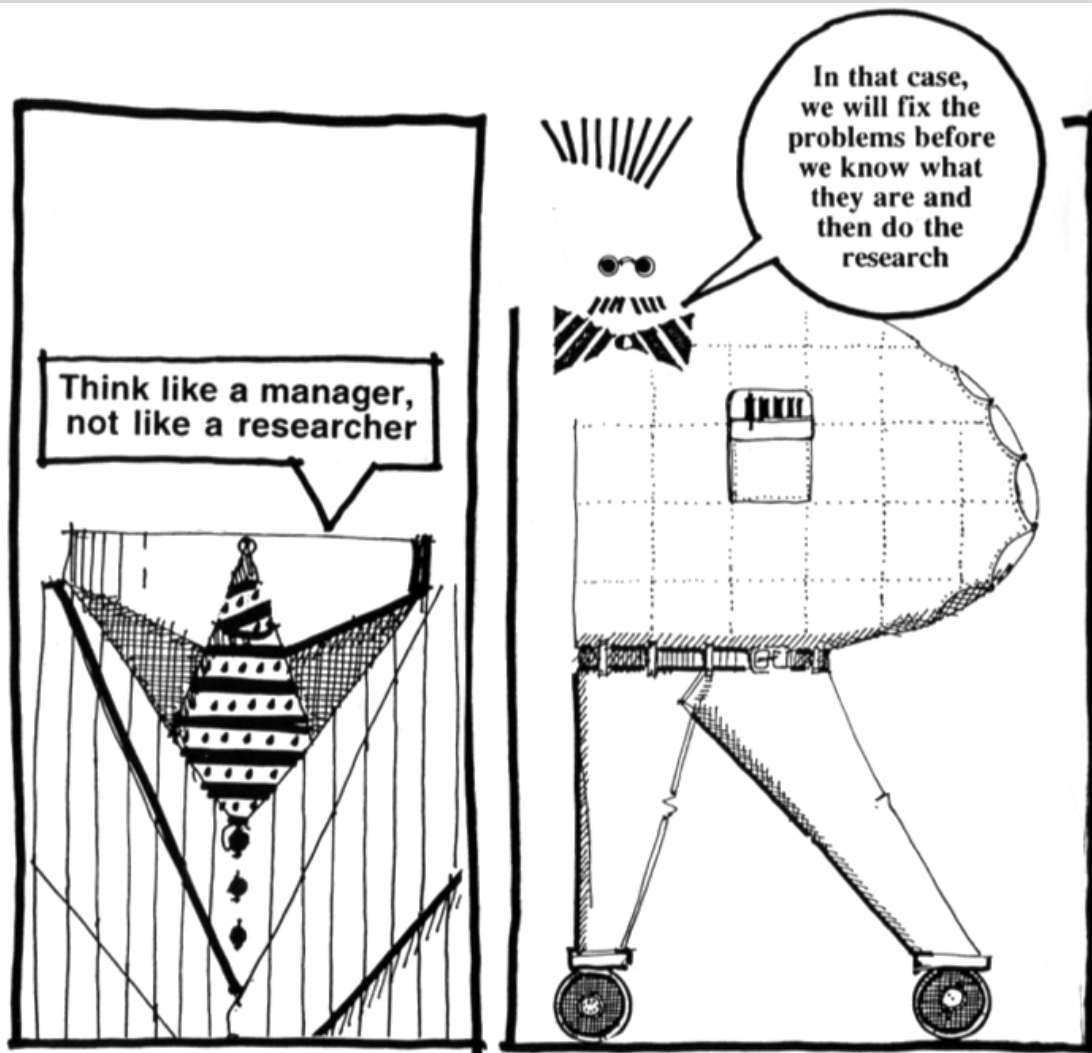


Researcher

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