



Gates, Harvard Join a Record Energy-Recycling Fund

By Peter Robison, Bloomberg News

Nov. 15 (Bloomberg) -- A private-equity fund backed by Bill Gates and Harvard University will make a record private investment of as much as **\$1.5 billion** in technologies that enable manufacturers to **recycle waste heat**.

The commitment from Boston-based Denham Capital Management LP will fund installation of turbines that reuse energy vented from smokestacks, cutting power bills and greenhouse-gas emissions. The projects will be managed by **Tom and Sean Casten**, a father-and-son team who run **Recycled Energy Development LLC** in Westmont, Illinois, the companies said in a statement.

Green investing is accelerating as fuel costs soar and lawmakers mandate more use of renewable energy. A California law signed in September requires energy-intensive businesses to cut discharges of greenhouse gases by 25 percent over 14 years.

Cascade is the private investment fund of Gates, the billionaire Microsoft Corp. co-founder who dropped out of Harvard in 1975. Cascade also formed a venture last year to build and acquire power assets in Texas and other southwestern states.

Denham will invest \$500 million in cash and borrow as much as \$1 billion to fund the Castens' projects over the next few years, participants in the deal said.

"I just think its time has come," said Riaz Siddiqi, a senior managing director at Denham, referring to the venture. "The real exciting feature is reducing the carbon footprint of U.S. industry, profitably."

Denham, started by former Harvard endowment managers, has a portfolio of \$2.3 billion in energy and commodities investments.

Tom and Sean Casten have led 250 power projects since 1977, installing systems at companies including General Motors Corp., Eastman Kodak Co. and the steelmaker ArcelorMittal.

Most industrial processes waste heat. Coke ovens and glass furnaces vent hot exhausts that can be used for power. The simultaneous production of heat and power, also known as cogeneration, has been used at Harvard and other colleges.

A 2005 study for the U.S. Department of Energy found almost 100,000 megawatts of untapped industrial waste energy across the U.S., equivalent to 19 percent of energy demand and almost equal to the output of U.S. nuclear plants.

"The business case is that it is less capital, less operating cost, less fuel and less pollution to recycle waste energy than to follow the silly path we're on," Tom Casten, 65, said in an interview.

One project is with a U.S. silicon maker, which the company wouldn't identify. Silicon, used in computer chips, is made by mixing quartz and coal in a furnace. Heat streams from the molten metal, resembling a scene from the "Terminator" action films, said Sean Casten, 35.

He plans to install a steam coil. As heat rises, it will evaporate water in the coil and drive a steam turbine to make 40 megawatts of power, a third of the plant's needs.

"You've now got electricity with no additional fuel use," he said. "And you can do that at basically every silicon plant in the world."

Denham and the Castens will jointly own a new holding company that manages the projects. The fund will put up capital to install the new equipment in return for long-term power supply contracts.

(continued on back page)

EVENTS

2008 IOF-WV Day at the Capitol, co-sponsored by the West Virginia Technology Association and Industries of the Future-WV, will be held January 15, 2008 at the WV State Capitol in Charleston, WV. For more information contact Kathleen Cullen at (304) 293-2867 ext. 5426 or Kathleen.Cullen@mail.wvu.edu.

IOF-WV Contacts

Carl Irwin
WVU NRCCE
(304) 293-2867 ext. 5403
Carl.Irwin@mail.wvu.edu

Kathleen Cullen
WVU NRCCE
(304) 293-2867 ext. 5426
Kathleen.Cullen@mail.wvu.edu

Jeff Herholdt
WV Division of Energy
(304) 558-2234
jherholdt@wvdo.org

Angela Shock
WVU NRCCE
(304) 293-2867 ext. 5434
Angela.Shock@mail.wvu.edu

Ed Crowe
WVU NRCCE
(304) 293-2867 ext. 5435
Ed.Crowe@mail.wvu.edu



The IOF-WV Monthly Update

January 2008

<http://iofwv.nrcce.wvu.edu>

Vol. 9.01

(continued from front page)

Tom Casten estimated installation costs for recycling waste energy in a metals plant at \$35 million to \$60 million. That's \$1,200 a kilowatt-hour, half the cost for new coal plants, he said.

An energy bill passed in August by the U.S. House of Representatives included cogeneration among methods for obtaining 15 percent of U.S. electricity from renewable sources by 2020. The provision wasn't in a Senate version, and the final legislation hasn't passed.

Tom Casten formed Recycled Energy after last year's sale of his previous company, Primary Energy Ventures LLC, to Canada's EPCOR Power LP.

To contact the reporter on this story: Peter Robison in Seattle at robison@bloomberg.net.

Last Updated: November 15, 2007 12:36 EST

Co-Funding Opportunities for IOF-WV Research Teams

<i>Announcement</i>	<i>Due Dates</i>	<i>Funding</i>
U. S. Department of Energy Solid State Energy Conversion Alliance (SECA) www.grants.gov	Request for Proposals: Now Open Due Date: January 15, 2008	\$3,000,000 in total funding is anticipated for FY 2008
U.S. Department of Agriculture National Research Initiative Competitive Grants Program www.grants.gov	Request for Proposals: Now Open Proposals Due: Dates vary- See Solicitation	\$190,000,000 in total funding is anticipated for FY 2008
U.S. Department of Energy Solar America Initiative Market Transformation: Solar Cities 2008 www.grants.gov	Request for Proposals: Now Open Proposals Due: January 10, 2008	\$2,400,000 in total funding is anticipated for FY 2008

Sign up today for a free energy assessment from the U.S. DOE

The U.S. DOE, through its **Save Energy Now Program**, is offering free industrial energy assessments for any facility that consumes at least 0.3 trillion (i.e., 300 billion) British thermal units (Btu) of combined energy per year, or its equivalent. Sign up today to save money on your company's energy bill and reduce emissions. **To apply, visit <http://www1.eere.energy.gov/industry/saveenergynow/> and follow the application instructions.**

Happy Holidays from the IOF-WV Team!

 **West Virginia University**
National Research Center for Coal & Energy
Industries of the Future- West Virginia Program
PO Box 6064
Morgantown, WV 26506-6064

Nonprofit Organization
U.S. Postage
PAID
Morgantown, WV
Permit No. 34



U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable