
Tanya M. Olsen '94, Drawn to Earth, 2008

# RIT prepares for leadership in the environmental revolution

"Use it up, wear it out, make it do or do without." The old saying has new meaning these days as the world's people struggle to cope with shortages of resources as well as global warming attributed to greenhouse gasses.

With the opening of the Golisano Institute for Sustainability, RIT gained increased status for its pioneering efforts in the areas of green engineering and manufacturing. In addition to preparing students to become leaders in these areas, the institute is helping business and industry adapt.

At the same time, the campus community is making strides to operate more sustainably.

The following stories explain what it means to go green at RIT. For more, see the online version of the Fall 2008 magazine at www.rit.edu/magazine.

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## Buildingsustainability,rightfromthestart

RIT established the Golisano Institute for Sustainability to be a global resource for education, research, technology transfer and outreach in sustainable manufacturing processes that will influence all aspects of product design and manufacturing. This groundbreaking initiative seeks to provide the next generation of engineers, policy makers and CEOs with comprehensive education and training in sustainability, while also promoting the development and implementation of new technologies that will increase both the environmental quality and economic efficiency of American industry.

"It is imperative that we accelerate strategies to promote a sustainable society and ensure future generations the opportunity to address their own needs," says B. Thomas Golisano, founder and chairman of Paychex Inc., whose $10 million donation launched the Golisano Institute in fall 2007. "For that reason, it is my desire for this new initiative to produce the first generation of professionals with the vision and know-how to deliver on the promise of sustainability, and I am very proud to be associated with this exciting endeavor."

### The next step forward

The Golisano Institute grew out of more than a decade of work in RIT's Center for Integrated Manufacturing Studies (CIMS) focused on remanufacturing, lifecycle engineering and alternative energy development. Research projects conducted through the new institute are building on this expertise to incorporate sustainable design, pollution prevention and new energy technologies into all aspects of production, from design through product reuse, remanufacture or recycling.

R·I·T Golisano Institute for Sustainability ROCHESTER INSTITUTE OF TECHNOLOGY

In addition, the Golisano Institute will house one of the world's first doctoral programs in sustainability, featuring educational and research opportunities integrating environmentally conscious product design and manufacturing, industrial ecology, technology and public policy, environmental science and management, and sustainable business practices. RIT anticipates admitting the first students in this fall.

"Here at the Golisano Institute, we are focusing on designing production systems that are completely closed loop with no waste product and a high level of material

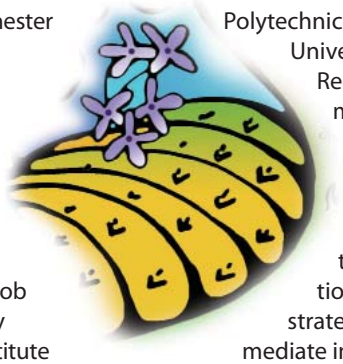
reuse," notes Nabil Nasr, RIT's assistant provost for academic affairs and director of the Golisano Institute. "In addition, our education programs will seek to provide our next generation with comprehensive knowledge and training in sustainable industrial development."

## Enhancing the development of sustainable industries

Currently, the Golisano Institute is partnering with numerous companies and government agencies in a wide variety of sectors with the goal of reducing environmental impact while also enhancing economic competitiveness.

For example, the institute is partnering with Delphi Corp. and the U.S. Department of Defense to accelerate the application of solid oxide fuel cells into the military's stationary and mobile systems. Delphi and the Golisano Institute will collaborate on the lifecycle design and development of sustainable production technologies, which could greatly enhance efficiency and reduce fossil fuel use in military vehicles. The partnership, made possible through a $2.75 million grant secured by Congresswoman Louise Slaughter and Senators Hillary Clinton and Charles Schumer, will also assist in accelerating commercialization of the technology, while increasing investment and technical capacity in the Rochester region.

"Rochester represents the nexus between research and manufacturing that is needed to make emerging technologies mainstream," says Congresswoman Slaughter. "The potential for long-term economic development and job growth, which is enhanced by the work of RIT's Golisano Institute for Sustainability, is both exciting and necessary for Rochester's future success."



The Golisano Institute was also selected to host the New York State Pollution Prevention Institute as the result of a highly competitive grant process. The institute, a comprehensive, statewide research and technology center, assists small and large businesses in implementing processes that will reduce the environmental footprint and enhance economic development. It is funded through a multi-year grant from the New York State Department of Environmental Conservation, with first-year funding of $3 million.

Work conducted will address industry needs and focus on applied research in clean technology development, design for remanufacture, and green product assessment. RIT will serve as the Pollution Prevention Institute's lead university in collaboration with academic partners at the University of Buffalo, Rensselaer Polytechnic Institute and Clarkson University as well as the state's Regional Technology Development Centers.

"The Pollution Prevention Institute will provide a tangible return on investment to New York state through the successful implementation of pollution prevention strategies that will have an immediate impact on the environment and result in significant economic benefits for business and industry throughout the state," notes Edwin Piñero, director of the Pollution Prevention Institute and a former federal environmental executive.

Anne Mulcahy, left, Xerox chairman and CEO, watches David Fister, senior staff engineer, demonstrate equipment in the Golisano Institute for Sustainability. RIT President Bill Destler, second from left, and Golisano Institute Director Nabil Nasr, joined Mulcahy on a tour of the facilities.

## Future development

The educational and research efforts within the Golisano Institute will continue to grow, thanks to additional investment from several Fortune 500 companies and leading charitable foundations. The development of the doctoral program was supported by a $465,000 grant from the Henry Luce Foundation and a $400,000 gift from the Chester and Dorris Carlson Charitable Fund. In addition, the state of New York, thanks to the efforts of the Rochester area Senate and Assembly delegations, has provided $12 million in support of the construction of a facility that will house the institute's research and educational programs. It is anticipated that planning and design on the building will begin this year, with initial construction slated for 2009.

In addition, Xerox Corp., which has a long-established relationships with RIT, is serving as founding partner of the Golisano Institute, committing $2 million to the development of its research and academic programs. The grant will also further the implementation of sustainable production and design at Xerox, which has been a leader in sustainable development for decades.

"The extraordinary response that we have received regarding the work being undertaken at the Golisano Institute is extremely gratifying," says Nasr. "It illustrates the tremendous progress we have made in creating academic and research programs that have real value for society, while also showing the importance of sustainable development to academia, government and industry."

Will Dube

For more information about activities of RIT's Golisano Institute for Sustainability, visit www.sustainability.rit.edu

# CAST's new home is RIT's greenest building

The new College of Applied Science and Technology Building, which opened in April, was designed to meet the standards of the Leadership in Energy and Environmental Design (LEED) Rating System of the U.S. Green Building Council, the most widely accepted rating system for evaluating sustainable, high-performance buildings.

The building features controls that monitor building occupancy and reduce power demands accordingly. The improved systems provide an approximate 21.4 percent savings in electrical energy (estimated annual savings of more than $24,000), which is comparable to the power necessary to service approximately 47 New York state homes.

RIT's new College of Applied Science and Technology facility opened in April.

It also includes two 1,500-gallon cisterns that collect rainwater from the roof to flush toilets in the restrooms. Rainwater is also used to irrigate some unusual plantings in the main lobby, where a "green wall" of plants improves air quality.

The CAST Building houses the William G. McGowan Center for Telecommunications, Innovation and Collaborative Research, the William G. McGowan Student Commons, the REDCOM Telecommunications Systems Laboratory and Lecture Facility, the American Packaging Corporation Center for Packaging Innovation and an Occupational Safety and Health Administration Training Center.

The building is also home to the college's Department of Civil Engineering Technology, Environmental Management and Safety and Department of Electrical, Computer and Telecommunications Engineering Technology.

In addition to RIT funds, funding for the $10.5 million, 33,600-square-foot facility came from the following individuals and organizations: William G. McGowan Charitable Fund, New York State Higher Education Capital Facilities Program, REDCOM Laboratories Inc., American Packaging Corp., Rock-Tenn Co., Eastman Kodak Co., Joseph Clayton, One Communications, Melles Griot, Mitel Inc., Fibertech Networks LLC, O'Connell Electric and Green Living Technologies LLC.

John Follaco

# RIT programs help students prepare to make the world greener

RIT's Kate Gleason College of Engineering has launched master's degree programs in sustainable engineering that enhance the incorporation of sustainable approaches in traditional engineering education and advance development of sustainability research. The programs include multidisciplinary coursework in lifecycle engineering, design for the environment, alternative energy and public policy.

In addition, the college offers a B.S./M.S. program in mechanical engineering and public policy in partnership with the College of Liberal Arts' Department of Science Technology and Society/Public Policy, as well as a minor in sustainable product development offered to technically focused majors across campus.

"These programs combine sustainable design and management practices with research and education in industrial and systems and mechanical engineering along with business and public policy," says Harvey Palmer, dean of the Kate Gleason College. "Our goals include the further development of the emerging discipline of sustainability and the graduation of a new generation of engineers who are adept at applying sustainable principles to engineering practices."

During the past two years, more than 200 students have enrolled in the sustainable engineering courses.

The College of Engineering also strives to provide students with opportunities to incorporate sustainability into the RIT campus and in the broader community. The college houses a student chapter of Engineers for a Sustainable World, an international organization designed to enhance the incorporation of numerous facets of sustainability in engineering, science and society. The RIT chapter is currently working with Rochester's St. Joseph's Homeless Shelter.

"Most of us got involved with Engineers for a Sustainable World because we wanted to make our community a better place," notes Jim Cezo, past president of the RIT chapter. "We all get a lot out of our work with St. Joseph's because we see the positive impact it has on people's lives and society as a whole."

RIT offers other degree programs focused on environmental studies, including:

- Environmental Science (M.S.), College of Science.
- Environmental, Health and Safety Management, (M.S.), College of Applied Science and Technology.
- MBA concentration in environmentally sustainable management, Saunders College of Business.

Will Dube

# Campus community moves toward a greener future

RIT tries to practice what it teaches.

"RIT has made a major commitment to lead the global development of intellectual capital and research related to sustainability," says President Bill Destler. "Our creation of the Golisano Institute for Sustainability is a highly visible public recognition of our commitment to and belief in the need for ever-increasing stewardship of our global resources. We, as a university community, must also demonstrate a commitment to these principles and practices in the operation of the university."

What's being done to make RIT greener? Here are a few examples:

- The first building incorporating standards of the Leadership in Energy and Environmental Design (LEED)Rating System of the U.S. Green Building Council opened this year (see page 21), and future building will follow these guidelines.
- Diesel fuel or electric vehicles have replaced gasoline-powered vehicles where possible. In addition, RIT Facilities Management Services (FMS), in conjunction with the Golisano Institute, is testing bio-diesel powered vehicles.
- Sophisticated controls regulate heating and ventilation of buildings.
- Green cleaning products are used campus-wide.
- Solar cells power all crosswalk warning lights.
- An experimental wind-powered light designed and built by engineering students through an FMS-sponsored project illuminates a section of a campus walkway.
- Increased insulation has been installed on all building roofs (as part of the re-roofing process) to the R-20 level.
- Single-pane windows in older buildings have been replaced with energy-efficient windows.
- Air lock entry vestibules have been installed on almost all buildings.
- Lighting fixtures are continuously replaced with more efficient models as the technology evolves.
- Water-saving plumbing fixtures have been installed.
- Energy Star equipment is the standard for RIT purchases.

Many of these practices date to the 1970s; energy consumption has long been an important financial consideration. More recently, increased concern about global warming and other environmental issues have made such efforts ever more compelling. In 2006, James Watters, senior vice president, Finance and Administration, established an advisory committee to review institutional practices for sustainability in construction of facilities, alternative energy technologies, green technologies and strategic policies for consideration by the university. Members of the Committee for Sustainable Practices include administrators, faculty and students.

"Initially, our goal was to evaluate alternative energy technologies," says Watters. "Over time, we've evolved into a much broader mandate."

Watters and the group are willing to take a look at any promising idea, but not all prove practical. For example, the committee looked into putting solar panels on the roof of the Hale Andrews Student Life Center. The cost of the project was estimated at $197,000 and a $75,000 state grant was available, bringing RIT's cost to $122,000.

Using solar power was expected to save $1,600 per year in energy costs.

"The committee thought there were better uses for university dollars," says Watters. "Some technologies just aren't yet economically viable."

Currently, serious consideration is being given to the use of geothermal technology for use in heating the planned Global Village student housing project (see page 25). Wind power could be feasible for some uses, says Watters.

Meanwhile, more can be done to encourage behavioral changes within the RIT community. Simple practices such as making double-sided copies or cutting down on making print-outs of e-mail are a start. Promoting car-pooling and walking and sponsoring student contests to reduce energy consumption in residences are other ideas.

Watters also believes RIT should strive to recycle more materials. In fiscal year 2006-2007, RIT recycled approximately 27 percent of total waste. Watters would like to reach the 40 percent level.

"To be viewed as a progressive university, you must be more sustainable," says the senior vice president. "There are a lot of opportunities, and we have to make sure we are doing all we can."

To learn more about RIT's efforts to become greener, visit www.rit.edu/ritgreen.

Kathy Lindsley

## Turning the pages green

This issue of RIT: The University Magazine is the greenest to date.

The cover contains 10 percent recycled paper from post-consumer waste (PCW) processed without the use of chlorine. The inside pages are 30 percent PCW. Varnishes and metallic inks are no longer being used in the magazine.

Lane Press, the Vermont company that prints the magazine, is Forest Stewardship Council (FSC) certified. FSC has established standards regarding economic, social and environmental concerns for the wood fiber industry. Less than 2 percent of the power used by the company comes from carbon fuel sources. Lane uses ink with the maximum percentage of vegetable oil suitable for its web presses. The ink comes from sources that prohibit use of substances such as formaldehyde known to be harmful to the environment. Ink is managed to reduce waste and used ink is recovered and sent to a supplier for use as fuel.

The changes in The University Magazine reflect efforts being made in other RIT publications including college brochures and bulletins. RIT's bi-weekly newsletter, News & Events, is printed on 100 percent PCW paper.

Learn more at the University Publications Web site: www.rit.edu/upub.