

Virginia Energy Network



Where Science and
Technology Create a
Window to the Future

Riverstone Technology Park

The Virginia Tobacco Indemnification and Community Revitalization Commission funded the creation of the Virginia Clean Energy Business Incubator. This program is the first major energy research and commercialization program in Halifax County.

With more than \$3 million in modeling and simulation capabilities, Riverstone is the headquarters for the new energy research and commercialization program.

Initial efforts have included creating energy feasibility studies and energy auditing services to identify problems that can be solved with new energy technology.

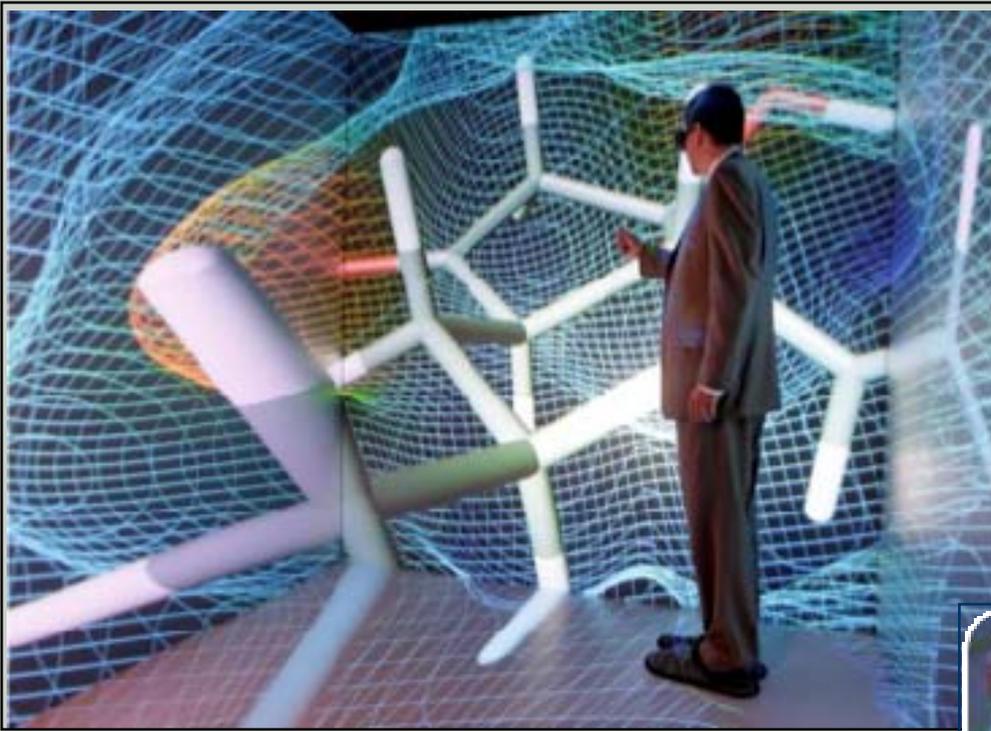
Initial technology may include, but is not limited to, Tetra-generation power production and small distributed wind technologies.

Using scientific tools and energy experts, the new center is blazing a trail in Southern Virginia as a comprehensive energy research center.

The Virginia Clean Energy Business Incubator has been accepted as an Associate Member of the National Alliance of Clean Energy Business Incubators, a program of the National Renewable Energy Laboratory/NREL. Its mission is to partner with the best incubators in government research and development.



Alliance of Clean Energy Business Incubators is a program developed out of the National Renewable Energy Laboratory



SPOTLIGHT on innovation

The Virginia Clean Energy Business Incubator is exploring the potential for using new energy sources to create power and recycle and reuse excess waste to create new energy sources.



What is TETRA-Generation?

By Robert Kennedy, Tetra Tech

The production of electricity from primary fuels is called "generation," and no thermodynamic process is perfect. About 2/3 of the fuel energy going into a power plant is thrown away as "waste" heat; only about 30% shows up at your wall outlet as useful electricity.

Using high-grade waste heat (illustrated in the visual above) to make steam—which can be used to make yet more electricity— or directly for space heat is called "CO-generation." Of course, some of the heat gets lost along the way, but some is salvaged.

It may seem counterintuitive, but an air conditioning effect can come from heat using absorption chillers. Using the waste heat from (2) above to run an absorption chiller is called "TRI-generation." At this point, the waste heat is pretty low grade, but it may still be useful.

A significant part (about 30%) of air conditioning work in the Southeast is dehumidification, i.e. pulling moisture out of the air rather than just cooling it. One way to remove moisture is to absorb it with a "desiccant" such as silica, like those little bags of pellets that come packed with cameras and consumer electronics. Once the desiccant gets wet, you recharge it by heating it. Then it's ready to absorb water again. Using the waste heat from (3) above to dry out used desiccant could be called "TETRA-generation."

The Virginia Clean Energy Business Incubator explores new concepts and tests new principles related to energy efficiency and energy development.

**ENERGY
FACTS**



Growing sales to oil & gas industry, leading universities, marks recognition of visualization's value in seismic data analysis, subsurface evaluation

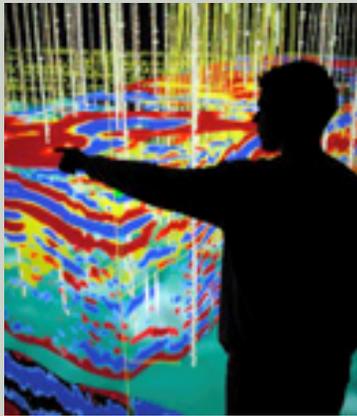
Kitchener, ON

- Fakespace Systems Inc. today announced four new contracts to provide immersive displays to organizations involved in energy resource exploration. The sales, to commercial oil and gas companies and leading universities, mark an increased acceptance of the value of visualization for seismic data analysis and subsurface evaluation.

Fakespace Systems signed on to provide visualization systems to Phillips Petroleum, Petrobras, Norwegian University of Science

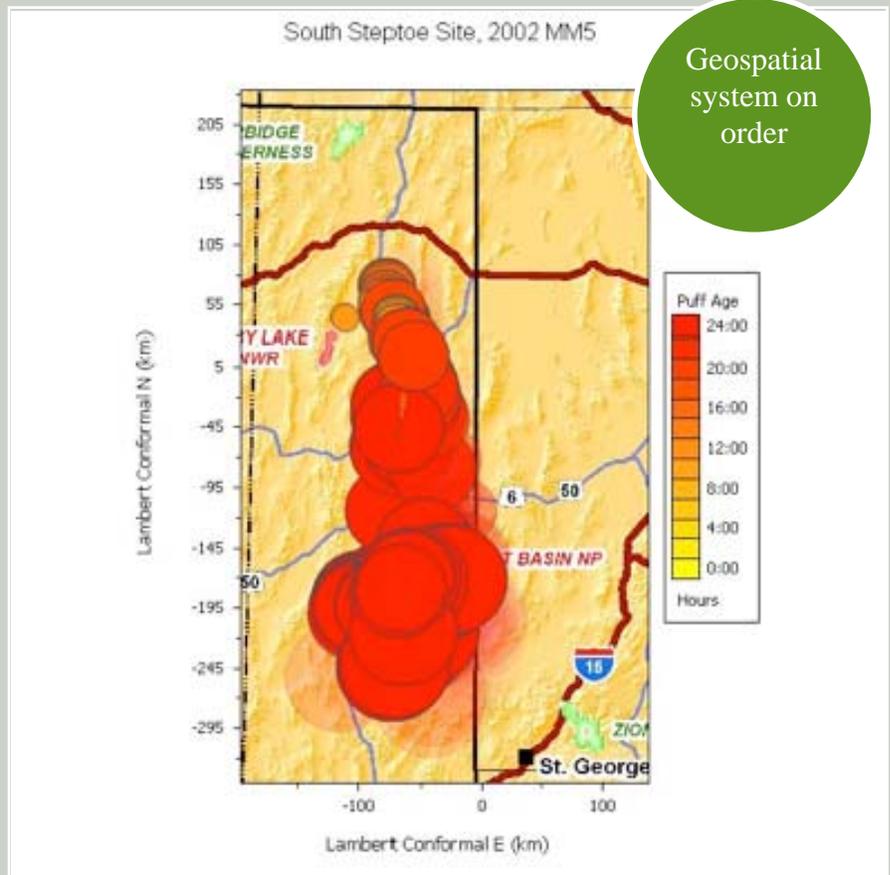
and Technology, and the University of Oklahoma. These include a broad range of displays used by geologists, geophysicists, and engineers to promote collaboration and better understanding of complex data, ranging from fully-immersive room environments to depth-enhanced displays that fit in an average size conference room. "We are working very closely with energy and natural resource companies to develop visualization systems that improve the efficiency and productivity of exploration teams," said Jerry King, manager of commercial and channel markets at Fakespace Systems Inc. "Our commitment and interest in meeting the industry's requirements for quality systems and service is showing results, with world-wide sales."

Riverstone is the newest location of an energy immersive display, called the 3-D Decision Support



3D Decision-Support Theatre Arrives

After months of waiting for one of the cornerstones of the program, the 3-D Decision Support Theatre has been delivered to Riverstone. Eleven large crates arrived on an 18-wheeler tractor trailer this month. Even though it was one of the coldest days of the year, with the help of the Halifax IDA and Tetra Tech, the system was successfully delivered.



Renewable energy service center launched

To further its mission regarding clean and renewable energy technology research and commercialization, the Virginia Clean Energy Business Incubator leadership created a new entity called the Renewable Energy Service Center of Southern Virginia (Service Center). The Center provides a value-added service to small, rural businesses throughout Southern Virginia.

Created in April 2009, the Service Center specifically seeks to assist small businesses who otherwise cannot afford large-scale energy audits or large-scale energy retrofits and efficiencies. Major overhauls of energy systems can be cost prohibitive for small business, yet their energy concerns are the same as large businesses with rising energy prices in 2008-2009. As a result, the Service Center provides technical assistance to assess sustainability practices and determine the efficiencies they can afford.

Large-scale retrofits can be costly, especially for small rural businesses. To address that problem, the Center provides

—Outreach and educational programming to rural small businesses on energy issues (businesses with up to 50 employees and less than \$1 million in annual revenues) - workshops, symposiums, summits, website, and a one on one support services (call center).

—Funding opportunities for sustainable implementation plans and technical assistance with application process to qualifying energy consumers through grants, loans, and information about potential investors.

—Brokering services to consumers and providers who can manage energy audits and assessments to determine energy consumption and cost benefit.



All mountains can be overcome

Editor's Corner

This newsletter is electronically distributed to friends and stakeholders of the Modeling and Simulation Center for Collaborative Technology.

If you would like a hard copy of this document, contact Dr. Carole Cameron Inge at vtresearch@gmail.com or call 434 575 7766.

- Virginia Clean Energy Business Incubator
- TETRA-Generation
- Immersive Environments used by energy companies
- 3-D Decision Support Theatre Delivered
- Renewable Energy Service Center of Southern Virginia launched
- Geospatial system on order

Virginia Energy Network

Riverstone Technology Park ☘ Confroy Drive ☘ Halifax Virginia