

# TechReach



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## Innovative Boat Lift Design Keeps Boat Owners, Cables Dry

Boat maintenance can be a dangerous and cumbersome task, with owners climbing over, around or through boat lifts to service their vessels. Now, these hassles are a thing of the past thanks to a revolutionary lifting apparatus designed by Float-On Corp. with help from the TRDA's Space Alliance Technology Outreach Program (SATOP).

Traditional lifting systems use guide cables and pulleys to keep the platform and boat level during lifting, but installers must enter the water to connect the cables to the front pylons underneath the waterline. Moreover, during operations, the boat lift and cables are submerged, and therefore, highly susceptible to corrosion, especially in brackish and salt water.



Ralph Poppell, president of Float-On, an aluminum boat trailer and lift manufacturer based in Vero Beach, Fla., wanted to develop a more user-friendly product. Already familiar with the TRDA and its SATOP program, he called upon the agency for assistance.

SATOP is a NASA-funded program that offers small businesses free technical assistance provided by more than 50 space alliance partners throughout the country, including aerospace contractors, NASA field centers, universities and colleges.

AJT & Associates, Inc., a SATOP platinum-level alliance partner, responded to Float-On's Request for Technical Assistance (RTA). A multi-discipline engineering firm that thrives on conceptual challenges, AJT specializes in design and construction of airport control towers as well as facility modification.

Poppell submitted several redesign ideas and asked for improvement ideas. Richard Wood, civil engineer and co-founder of AJT & Associates, visited one of Float-On's boat lift installation sites for first-hand knowledge of the existing lift method.

"The challenge was to create a lifting mechanism that stays out of the water, but still gives the full access of a float-on boat lift," Wood said. "It was a little tricky because the normal method of lifting is to go to a point that's the lowest below the boat itself. We made some adjustments to keep the lift equipment intact and operate it from a different point."

Using schematics and CAD drawings, Wood modified Poppell's design concepts to incorporate higher lifting point placements for the rerouted pulleys and cables within existing gear and motor systems. Housed on columns at the top of the lift and the stern of the boat, the improved mechanical apparatus operates with minimal water contact. Load calculations and welding connections, based upon Wood's conceptual design, were left to Float-On's in-house engineer.

Poppell said with the new Float-On lift, the boat is readily accessible and extremely convenient, unlike the old systems.

"Float-On not only provides unobstructed access to the boat, but also is constructed of powder-coated aluminum so that it will last longer and maintain its appearance for years," said Poppell, who projects the new product will increase sales and jobs at the family-owned business.

The full new line of compact Float-On aluminum boat lifts can power vessels weighing 4,000 to 30,000 lbs. For more information, visit [www.floaton.com](http://www.floaton.com).

AJT & Associates is one of five platinum level SATOP space alliance partners. Others include New Mexico State University, Raytheon, TEAM Specialty Products and The Boeing Company. For more information about SATOP, or to request technical assistance, please visit [www.SpaceTechSolutions.com](http://www.SpaceTechSolutions.com).

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## **FNBIC Celebrates 10 Years of Incubation Success**

In August, the TRDA's Florida/NASA Business Incubation Center (FNBIC), the first NASA-funded incubator in Florida, celebrated its 10th anniversary. Since its launch, the FNBIC has helped more than 100 small, technology businesses overcome their start-up challenges and grow into successful companies.

Located at Brevard Community College-Titusville, the FNBIC offers entrepreneurs convenient access to valuable business resources and amenities that reduce overhead expenses and lay the foundation for future success, including: short-term/flexible leases, furnished office space, high-speed Internet access and a conference room with presentation technology. The FNBIC also offers business development/consulting, networking opportunities, and workshops and seminars on securing grants, investment capital and more.



Since 1996, the FNBIC has made significant achievements:

- More than 100 companies assisted
- 21 graduates
- 1,232 direct and indirect jobs created (at an average salary of \$60,379)
- \$32.7 million generated in new sales revenue
- \$1.08 million generated in capital investments
- \$900,000 awarded via Small Business Innovation Research (SBIR) grants

Client success has been equally as impressive. American Services Technology, Inc. (ASTI) a two-person company working with NASA to license a turbo pipe cleaner, was the first FNBIC client in 1996. ASTI graduated from the FNBIC in 1998, and by 2001 recorded a five-year sales growth of 736 percent with revenues exceeding \$7.2 million. Today, ASTI has 130 employees with contracts and operations in nine other locations and revenues exceeding \$10 million.

Command Control Technologies Corp. (CCT) joined the FNBIC in 1997 as a three-person company providing high-tech computer products and system development services to the aerospace industry. In 1998, CCT won the NASA-KSC Small Business Contractor of the Year Award and received a NASA technology license to begin selling its Command and Control Toolkit. Three years later, CCT graduated from the FNBIC with 20 employees and a 350 percent increase in sales.

"Like most small businesses, we started CCT on a shoestring budget," said Peter C. Simons, president of Command and Control Technologies Corporation. "Setting up in the FNBIC allowed us to save the investment we would have made on infrastructure. Thus, we were able to further develop our product, while keeping overhead low. I expect we would have succeeded in the long run, but we would not have been as well-established as we are today without being a part of the FNBIC."

TRDA's Interim Executive Director Dave Kershaw sees continued success for the FNBIC. "Entrepreneurship is good for the nation because it creates jobs and positively impacts all economies," Kershaw said. "Our goal is to continue serving the high-tech entrepreneurial community in northern Brevard County by supporting new business formation and serving as an engine for continued growth. With 10 years of history and experience under our belts, we believe we'll be able to accomplish even greater results in a lesser timeframe."

The FNBIC is located at 1311 North U.S. 1, Building 1 and can accommodate 10 to 15 early-stage companies engaged in a variety of technology commercialization efforts. For more information, call (321) 267-5601.

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## Aqua-Magnetics

For most children, playing with a Slinky toy amounts to seeing just how far down a staircase it will actually travel. But for rocket scientist Dr. David Woodbridge, watching his son Tom play with that simple toy sparked an idea and a lifetime of developing a system that he knew would drastically improve the energy industry.

From observing the coils in the Slinky, Dr. Woodbridge believed the concept could be adapted to create an efficient, productive product that would convert ocean wave energy into electricity.

"My father knew this was a solution early on, with the constant movement of ocean waves, he figured there had to be a resourceful way to get that energy," said Tom Woodbridge.

In 1972, Dr. Woodbridge founded the company that would take on that endeavor - Aqua-Magnetics, Inc (AMI). Over the years, while juggling work and family, and contributing their own funds, the company developed the Ocean Swell and Energy Conversion (OSWEC) generator. Now three decades later, Tom is at the reins of Aqua-Magnetics and continues the development of generator.

While not wearing his engineering hat as a longtime employee of NASA's Kennedy Space Center, Woodbridge has spent more than two years developing AMI's signature product - the Ocean Electric Buoy. This floating buoy basically moves up and down as the ocean swells and waves pass by the buoy. Damping plates maintain the stability of the coil while the generator moves against it. Electric currents are generated from the relative motion between the magnetic field within the coil.

Although long removed from the original Slinky concept, what makes the AMI system different from traditional energy sources is the use of the linear, reciprocating generator that Woodbridge created. "The up-and-down motion eliminates some conversion steps," he said. "This direct step from the wave motion right to the electric power is far more efficient than other systems." In addition, the simplicity of the design improves the reliability of the product while minimizing costs."

The buoys can then be mounted on platforms, then the energy is cabled back to shore. The energy is free, it requires no fuel, and it produces no waste or pollution. Ultimately, the electricity can be added to a power grid at the cost of about 4 to 5 cents per kilowatt hour for use by the general public.

The AMI solution is ideal for the offshore platform industry, since diesel fuel is currently used to power the platforms. In addition, island communities would benefit from using this system for utility power. Coastal communities could use the system in navigation and channel lighting. The buoys also can be used for ocean data collection, and be equipped with sensors to be used for port security.

With support from TRDA, AMI has been able to apply for international patents, hire engineering design support and have prototypes built. Woodbridge is currently performing initial testing of prototype buoys. Woodbridge also has received valuable support from TRDA in developing a business plan, and Woodbridge has attended useful energy conferences in order to network and secure potential investors.

Woodbridge is unquestionably the biggest proponent of capitalizing on ocean wave energy but also is quick to point out that it's only one piece of the puzzle in solving the energy crisis. "It's important that we use all the resources at our fingertips - wind, solar, water. They can all work together, because no one method can do it all."

Today the need for alternative energy solutions is still front-page news, and Woodbridge hopes to one day make headlines with his solution that harnesses the power of the sea into clean, renewable energy.

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## Tampa Teacher Brings Workplace Safety to the Classroom Thanks to TeacherQuest

When school let out this past summer, Temekia Logan only had a few weeks off before she went back to

work. But, this time, it wasn't in the classroom. Logan was one of 90 Florida teachers that participated in the 2006 TeacherQuest program.

Sponsored by the TRDA's education department, known as The Endeavour Academy, TeacherQuest is a 7-week, paid professional development program in which K-12 teachers go to work at select science and technology-based businesses in Florida. Teachers gain valuable industry knowledge and take it back to the classroom to make math, science and technology studies more exciting and challenging for students.

Logan, a sixth-grade science teacher at Young Middle Magnet School in Tampa, worked at ConMed Linvatec, which specializes in arthroscopy, endoscopic medical video systems and powered surgical instruments. From June 8-July 21, 2006, she worked with the company's safety officer, performing job safety analyses as preventive measures for reducing musculoskeletal disorders in the workplace. She also studied the effects of noise exposure by conducting sound level measurements.

"This was a phenomenal hands-on opportunity," Logan said. "I learned so much in such a short period of time."

How will Logan's students benefit? She plans to implement "workplace safety" into her curriculum during the upcoming Great American Teach-In, which brings community professionals into the classroom. Logan has made arrangements for ConMed's safety officer to visit with her students and demonstrate the use of noise-monitoring equipment.

"Plans are to have the students monitor the noise level in the cafeteria during all lunch periods, as well as in the gymnasium during a physical education class," Logan said.

Representatives at ConMed Linvatec were thrilled to have such a quality employee for the summer. In addition to her work with the safety officer, ConMed Linvatec had Logan review the company's training materials, programs and presentations and make recommendations for improvements.

"Temekia brought her instructional expertise to the table," said Todd Gladden, corporate training manager for ConMed Linvatec. "Her perspective gave us a non-biased look at our programs and her suggestions were very valuable. She was a great resource."

Gladden believes the TeacherQuest is a win-win situation for both the teachers and the employers.

"It's a great way to help out the community, while drawing from the knowledge of qualified professionals who can help you uncover other ways of doing business successfully," he said.

Applications for the 2007 TeacherQuest program will be available in February 2007. For more information on participating, either as a teacher or an employer, visit [www.trda.org/edu](http://www.trda.org/edu) and click on "The Endeavour Academy" link.

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## Moonwalker Gets Down to Earth with Florida Tax Collectors at Annual Conference

Over half of Florida's tax collectors enjoyed to talking to former astronaut and moonwalker, Charles Duke Brig.Gen., USAF, retired, courtesy of TRDA, at the annual Florida Tax Collectors Conference held October 1-5 in St. Petersburg, Fla.

General Duke hosted a meet and greet for the tax collectors after the opening ceremonies of the conference. He posed for numerous pictures and autographed his book, *Moonwalker*, for the attendees.

General Duke is one of 12 men who have walked on the moon and was the lunar module pilot on Apollo 16 in 1972. In December 1975, Duke retired from the Astronaut program to enter private business. He is owner of Duke Investments and is President of Charlie Duke



Enterprises.

TRDA was a sponsor of the 2006 Tax Collectors Conference and unveiled a new marketing campaign for the Columbia Challenger memorial license plate, the Space Plate, at the conference. This new campaign highlights the challenges of Xtreme Xploration and will be debuting in tag offices across the state of Florida in January.

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## Frank Kinney Moves to Florida Tech

After 19 years as executive director of the TRDA, Frank Kinney resigned in August to accept a position as vice provost for research at the Florida Institute for Technology in Melbourne, Fla. Kinney, who served as the executive director since TRDA's establishment in 1987, played an integral role in helping to grow the organization into a statewide and nationally acclaimed technology development agency that is making huge strides in education and economic development.

"Over the years, Frank was able to work with his boards of directors to develop strong, sustainable and important program areas for the TRDA," said Dave Kershaw, interim executive director of TRDA. "These areas have made significant impacts on the economic development of our region and Florida as a whole."

Kinney helped establish numerous programs during his tenure at the TRDA. The Space Alliance Technology Outreach Program (SATOP) helps small business owners overcome technical challenges via free engineering assistance provided by the aerospace community. The Florida/NASA Business Incubation Center gives small businesses access to the tools and resources they need to grow into profitable companies. In 2001, Kinney helped establish The Endeavour Academy, which provides professional development training programs to K-12 teachers in the areas of math, science and technology. Kinney also spearheaded the launch of energy initiatives and helped lead Florida in promoting the development of clean energy technologies.

Kinney credits his former TRDA colleagues who, in his words, really helped each initiative develop into a successful program.

"I was fortunate to assemble an outstanding team of individuals who work tirelessly to accomplish the great things for the TRDA on a daily basis," said Kinney. "I am very proud of my 19-year association with the organization and I am confident its future is very bright, given the strong leadership within the TRDA."

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