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### Turning up the heat in the quest for renewable energy

Dan O'Connell was a born tinkerer. As a kid, he enjoyed "tinkering with widgets" just to see how they worked.

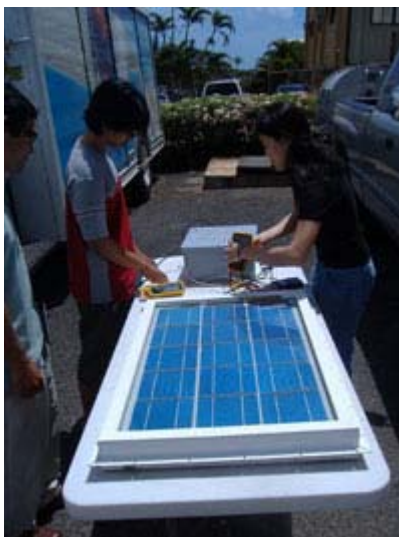
By the time he was in high school, he was not only taking things apart, but putting them back together again even better than they were before.

Today in his Wailuku facility, Dan O'Connell and partner Terry Born have taken their lifelong love of engineering and mechanics to a whole new level – tinkering with various optics, medical sensors and alternate energy technologies. And making them better.

Their new Maui-based company is called Hnu-Photonics. The "Hnu" in the name represents the energy contained in light which is synonymous with  $E=mc^2$ .

With Dan's and Terry's 23 years experience in the in research, design and fabrication of state of the art technologies for military and research applications-as well as consumer products-Hnu-Photonics is an incubator for a plethora of technologies quickly moving from concept to market.

Since February 2006, the young company has partnered with a range of high profile clients including Textron, Boeing, Trex and the University of Hawaii.



In fact, on any given day at the office, innovative prototypes and products requested by corporate customers can be found in varying stages of development, stretching wall to wall.

This is serious stuff for a kid who started out just messing with widgets.

While Dan has big plans for his company, he has bigger plans for the environment: To develop renewable energy technology that can be mass-produced throughout Hawaii.

"Terry and I want to make Maui 100% solar energy-driven," Dan said. "Once we prove we can develop and implement a sustainable, cost-efficient solution for the entire island, we'll take it out to the state."

## Timezone advantage attracts knowledge based industry to Maui

It is 1 AM on a cold, rainy morning in Massachusetts. The emergency room staff at a small hospital waits as paramedics unload a patient from their ambulance. Involved in a one car rollover, the girl on the gurney has back and neck pain.

The ER Doctor orders x-rays-which are quickly taken-to rule out fracture of the girl's spine.

Instead of waking an on call radiologist to read the images, they are sent 5,000 miles away via the internet to Maui, Hawaii. The sun has set an hour ago at the Maui Research & Technology Park, and the medical staff at the Virtual Radiologic office are busy with work from across the United States.



A veteran radiologist's trained eye interprets the images from Massachusetts, and the good news arrives back at the hospital within 20 minutes-no sign of fractures.

As touted by local economic developers for years, Virtual Radiologic is leveraging two of Maui's competitive advantages. A mid pacific location that allows businesses to "shift time", and diverse access to high bandwidth telecommunications.

"We're talking about renewable solar, wind and/or storage technologies that can increase output over existing photovoltaic products by several factors. For homeowners, it will mean lighter, more durable and cost-efficient solar panels. For businesses, it could mean large moving panels that track the sun during the day and store the energy at night to produce significant sustainable power.

We'll customize the alternative energy solution to the need." Dan credits the Maui Economic Development Board (MEDB) for helping him jumpstart his dream venture.

"Partnering with MEDB has given me resources and contacts I wouldn't necessarily have access to as a first-time startup on Maui," Dan said. "They are extremely supportive to small business owners."

One of the contacts MEDB has helped him make was Maui Community College.

In an effort to encourage students to pursue technology-related careers, Dan and MCC are currently discussing the possibility of introducing courses in Electro-optics, Photovoltaic and Solid-state Semiconductor devices.

His goal is to bring another resource for technical education to the community that will eventually lead to full-time positions and student internships at Hnu-Photonics, as well as other high-tech businesses in Hawaii.

Dan also plans to work with administrators at a selected high school on Maui to see where he could provide valuable input to students about optic technologies and associated technical careers.

"Promoting technology through education is an important part of the big picture. Being part of Maui's education pipeline is a win-win situation for the schools, the students and our company," he emphasized.

According to Dan, the global situation with oil has been enough motivation for U.S. companies to make a commitment to doing research or at least exploring alternate sources of energy.

"Ultimately, I'd like to see Hawaii develop as a renewable energy model for the rest of the nation to follow," he said.

Headquartered in Minneapolis, Minnesota, Virtual Radiologic Corp. (VRC) serves more than 600 medical institutions, hospitals, radiology practices and diagnostic imaging centers nationwide. The company provides 24x7 access to American Board of Radiology-certified radiologists who support clients when workloads increase during the day and relieve the burden of performing reads overnight, and during holidays, weekends and other difficult-to-staff times.

The Maui facility provides VRC's radiologists with greater flexibility. VRC's physicians have a choice of working from Hawaii permanently or combining work and vacation schedules to spend extended time in Hawaii.

## Pacific Disaster Center Growing to Meet New Challenges

Following the celebration of its tenth anniversary in late 2006, Pacific Disaster Center (PDC) began the process of transition to an entirely new phase in its development. This new phase is an evolutionary leap, emphasizing business development, while continuing and enhancing established programs of support for disaster management in Hawaii and throughout the Pacific and Indian Ocean areas,

PDC was formed in the aftermath of Hurricane Iniki, which was devastating to the island of Kauai, to improve and expand both disaster preparedness and response capabilities in Hawaii. After five years of success, PDC was ready for new challenges. In December 2001, East-West Center (EWC) became the managing partner of PDC, and four goals were articulated:

1. Make PDC an economically sustainable organization,
2. Increase PDC's technical program capacity and capabilities,
3. Expand operations beyond Hawaii, and
4. Grow PDC as a catalyst for economic development.

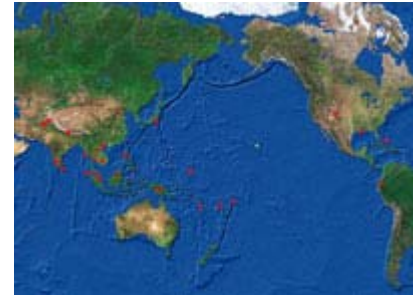
EWC helped establish a sustainable, businesslike structure for PDC and made way for the staff and management of PDC to improve the development and deployment of its technical programs. In many ways, EWC opened doors for PDC and helped to establish relationships, but PDC then had to earn the trust and respect and, eventually, the contracts and assignments made possible by those contacts.

The role of catalyst for economic development grew with the work. PDC partnered with software developers, consultants and hardware providers, for instance, on many projects. Also, after major projects like a tsunami early-warning system for Thailand, the possibilities for economic development for others go on far beyond the project completion.

Clients need maintenance, upgrades, expansions and much more. PDC's growth under the managing partnership with EWC exceeded expectations on all its goals.

To most effectively leverage the benefits realized in collaboration with EWC, the follow-up activities had to involve new approaches to business development and new styles of interaction. This meant a new managing partner to oversee the next steps. In December 2006, the University of Hawaii became PDC's managing partner.

Business development in PDC's UH-managed era, largely means undertaking projects funded directly by clients, rather than through the cooperative agreement under which PDC was founded. Clients can include governments, government agencies and non-governmental organizations in disaster management (DM). Some of this business development will be powered by outreach based on PDC's relationships and its well-informed awareness of DM needs and possibilities, but much of it is being driven by new clients seeking for themselves the information and communication technology products PDC has already provided for others. Future growth likely includes expanding PDC's are of interest to include threats not associated with what are usually called natural disasters. These might include man-made effects such as major accidents, terror/WMD-related events and impacts associated with changing climate and sea levels. The Maui-based Pacific Disaster Center has already worked on projects and made im least 20 nations. The future looks brighter and broader than ever with that number guaranteed to increase rapidly.



The yellow dot in the mid-Pacific represents PDC on Maui, in Hawaii. The red dots represent places outside of Hawaii where PDC did projects or made diplomatic presentations during the five years while EWC was PDC's managing partner. The map itself will have to be expanded to include the east coast of South America and all of Africa soon to accommodate new projects.



Pacific Disaster Center recently hosted the 2007 conference of Pacific Risk Management Ohana, or PRiMO, the members of which are disaster management professionals and stakeholders from countries throughout the Pacific. Here, PDC Executive Director Ray Shirkhodai, pauses over a bowl of poi with Eileen Shea of NOAA IDEA Center and Russell Jackson of NOAA Pacific Services Center.

To receive email updates about High Tech Maui events please visit the following link: <http://www.hightechmaui.com/programs/email-list.cfm>.

High Tech Maui A Project of Maui Economic Development Board, Inc.

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