

Spotlight on innovators in green technology

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This spotlight focuses on some of the North Bay people and companies that are creating new green technologies that are being put to work in the field daily. Know someone who should be here? Let us know. Listed alphabetically by innovator name.

Doug Allard

Chief executive officer, **KriStar Enterprises**; P.O. Box 6419, Santa Rosa 95406; 707-524-8181; www.kristar.com

Doug Allard has been on the forefront of controlling stormwater erosion since he started KriStar Enterprises in 1993.

As federal and state regulations related to clean water and endangered species protection have increased, KriStar's line of products designed to keep washed-away pollutants such as sediment and petrochemicals out of waterways broadened. By the height of the construction boom, KriStar had 40 percent market share for stormwater management products such as fiber roll and fabric bag filters.

In 2008 Mr. Allard formed **Cudo Stormwater Systems** as more water-quality regulators called for construction sites not only to have slower and cleaner stormwater flow offsite but also to mimic the hydrological conditions of the site before construction, called low-impact development. Cudo Cube modular underground water-retention products include a tree-box cistern and a system for improving the sediment-sifting action of bioswales. -J.Q.

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Lee Bartolomei

Lee Bartolomei

President, chief executive officer, **Deposition Sciences Inc.**; 3300 Coffey Lane; Santa Rosa 95403; 707-573-6700; www.depsci.com

Lee Bartolomei and optical coating company DSI have been working on halogen lighting since the company was founded 25 years ago. Now, **Philips Lighting** and DSI are working together to meet the challenge of a probable ban on traditional incandescent bulbs.

According to Mr. Bartolomei, halogen bulbs give similar light to incandescent, but they last for two years and are twice as efficient. Also, they don't contain mercury like compact fluorescent bulbs, making them much safer to dispose of.

Regular halogen lights produce 14 to 20 lumens per watt. Energy-saving halogen bulbs produce 24 to 28 lumens per watt currently. DSI is working to increase that number to 45, which is expected to be the mandated minimum in the U.S. by 2020.

Mr. Bartolomei, who received a M.S. in mechanical engineering at U.C. Berkeley and an MBA from the University of Santa Clara, is the founder of DSI and has served as DSI's president, CEO and chairman of the board since the company's inception in 1985.

Mr. Bartolomei has 43 years of experience in the optical coating industry. He worked for **Optical Coating Laboratory** Inc. for nearly 20 years, holding the position of senior vice president of operations before he left to found DSI.

Mr. Bartolomei holds several patents for precision optical coatings, optical components and coating

deposition processes. -L.S.

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Louis Capuano

Louis Capuano

President, chief executive officer, **ThermaSource**; 3883 Airway Drive, Ste. 340; Santa Rosa 95403; 707-523-2960; www.thermasource.com

Starting out in the petroleum drilling industry, Louis Capuano moved into geothermal drilling in the 1980s, first for **Hughes Aircraft Corp.** and then as CEO of his own geothermal drilling consultancy ThermaSource.

During the past two years, answering the demand for more clean, sustainable geothermal power, Mr. Capuano has taken his company from a three-man operation to the largest geothermal drilling outfit in the world today, with 220 employees and a fleet of 10 drilling rigs. He has raised \$93 million in venture and private capital.

"We expect to be a significant force in the exploration and drilling of geothermal wells globally," he said.

Prior to ThermaSource, Mr. Capuano was drilling manager for **Thermogenics Inc.**, a wholly owned subsidiary of Hughes Aircraft Corp. He earned a B.S. in petroleum engineering from the University of Southwestern Louisiana. Mr. Capuano has more than 32 years of geothermal experience. -L.S.

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Paul Ciandrini

Paul Ciandrini

President, chief executive officer, **HydroPoint**; 1720 Corporate Circle; Petaluma 94954; 800-362-8774; www.hydropoint.com

Paul Ciandrini took the helm at HydroPoint after concluding the company's technology lowers the cost of irrigation, requires no changes in behavior and is good for the environment as well.

"This is a rare confluence of positives," he said.

HydroPoint's automated irrigation control systems pull down a constant stream of satellite weather data and coordinate it with local moisture readings to determine when and how much water to apply to plants.

Mr. Ciandrini served in executive positions for several software companies, including the senior vice presidency of **Oracle**, before taking the position. He served as president of **Plumtree Software Inc.**, where he facilitated the company's acquisition by **BEA Systems**. He has an MBA from Rutgers University.

"Water management and conservation through automation will follow the same trajectory of business automation software once people connect the dots," he said. -L.S.

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Rick Cockrell

Rick Cockrell

Chief technology officer, **Core4 Systems**; P.O. Box 5570, Napa 94581; 707-255-1623; www.core4sys.com; 15 employees

Rick Cockrell, 47, started serious work in 2008 on a high-efficiency data-center cooling and air-handling system, and Core4 was spun off from Napa-based mechanical contractor **Bell Products**

in July 2009.

Data centers nationwide consume 120 billion gallons of water annually for cooling and \$7.4 billion in electricity in 2006, according to the U.S. Environmental Protection Agency.

Putting his two decades of service and engineering experience in heating, air-conditioning and ventilation systems to the problem, he developed a system that reduces electricity use by 72 percent and water use for cooling by up to 28 percent.

"Many data center operators simply trash failed servers that operate outside of manufacturer-specified temperature and humidity tolerances in favor of dirt-cheap commodity servers as a replacement strategy, rather than investigating how to improve their cooling infrastructure to preserve the shelf life of servers," Mr. Cockrell said.

One of the largest installations was at telecommunications service provider **Sonic.net**'s main data center in Santa Rosa. -J.Q.

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Tom Faust

Tom Faust

CEO, **Redwood Renewables**; 6 Endeavor Drive, Corte Madera 94925; 415-924-8140; www.redwoodrenewables.com; 10 employees; \$30 million order backlog

An entrepreneur for 25 years, Tom Faust, 60, started the company in 2003 to produce photovoltaic arrays that look like and are installed like roof tiles rather than on various types of brackets and mounts on top of conventional shingles or tiles.

The company holds four patents on the SolTile technology, which was a finalist in the green building category of the 2007 Clean Tech Open competition.

Redwood Renewables received a \$1.4 million grant to develop a complementary "cool roof" tile that reflects 30 percent to half the heat energy. The company has received a purchase order from a roofing company to produce \$30 million in SolTile units. -J.Q.

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Jim Glessner

Jim Glessner

Founder and chairman, **Clean Concrete Technologies**; 555 Fifth St., Ste. 300D, Santa Rosa 95401; www.cleanconcrete.com; about 15 employees

Jim Glessner, 48, and Richard McCabe started **Ekocrete** in Santa Rosa in December 2007 to develop strong "green" concrete, and early this year they received a patent for low embodied-energy concrete, called CleanCrete.

Certain traditional concrete now can contain more recycled materials such as flyash and aggregate, but reducing the amount of cement has been a goal. Cement manufacturing involves heat and chemical decomposition that releases carbon dioxide, making cement a source of as much as 7 percent of emissions of human-caused greenhouse gases. The CleanCrete mix uses 7.5 percent Portland cement, compared with 12 percent to 17 percent with common mixes.

More than 20,000 bags of the mix are being sold through **Buddy Rhodes Concrete** in San Francisco, but Mr. Glessner is scoping the Santa Rosa area for a research facility to develop a version for the mass markets and precast concrete factories. This year he expects to hire five to 15 more workers. -J.Q.

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J.R. Gunter

J.R. Gunter

President, **Codding Steel Frame Solutions**; 1300 Valley House Drive, Ste. 100, Rohnert Park 94928; 707-665-0800; [ww.coddingsteel.com](http://www.coddingsteel.com); 18 employees

J.R. Gunter, 48, came to Codding Steel Frame as president in September 2009 with 25 years of experience in construction, including owning prebuilt-structure innovator **GV Custom Modular** of Healdsburg until it closed in 2002.

Codding Steel is part of real estate owner and developer **Codding Enterprises**. As part of a changing company philosophy toward conservation of resources and energy, Codding Enterprises in 2007 invested \$5 million into setting up a 50,000-square-foot factory to produce light-gauge steel panelized framing from recycled metal under a license from Canada-based **Genesis Worldwide**.

Electricity use at the plant is offset by a photovoltaic array, and steel used in manufacturing contains 35 percent to all recycled material.

Codding Steel started with a focus on providing quick-to-assemble panels for the 1,900 homes and commercial space at the ongoing **Sonoma Mountain Village** redevelopment project in Rohnert Park. Yet the scope expanded into commercial work and then to design, manufacturing and construction of wall panels and light-steel project components.

Possible benefits of steel construction include fewer indoor allergens, faster construction and little job-site waste. Such a building method is increasingly appearing in affordable-housing, retail and solar carport projects, according to Mr. Gunter. Codding Steel has formed manufacturing partnerships with retail chains for new stores and a major builder of photovoltaic carports.

"I anticipate moderate growth over the next 12 to 18 months," he said about North Bay construction opportunities, "yet see the national market rebounding in the commercial industry at a faster pace."
-J.Q.

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Jay Harman

Jay Harman

Founder, chief executive officer, **PAX Scientific**; 1615 Fifth Ave. and F St.; San Rafael 94901; 415-256-9901; www.paxscientific.com

Jay Harman began his career as a naturalist with the **Department of Fisheries and Wildlife** in Australia, but soon demonstrated a flair for invention, particularly in the field of fluidics. He built his own lightweight sailboat based on natural design and came to believe that industrial products should imitate the efficiencies of nature.

PAX Scientific is Mr. Harman's fourth startup, from which he has spun off **PAX Streamline**, **PAX Water Technologies** and **PAX Fans**. His first product was an impeller with a design so elegant – it's called the Lily – that it's been featured in an exhibit at the **New York Museum of Modern Art**.

Mr. Harman is an avid sailor. In addition to his self-designed and built sloop, he owns a 150-foot minesweeper, sister ship to Jacques Cousteau's Calypso. -L.S.

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John F. Kennedy

John F. Kennedy

Senior manager, **Autodesk Inc.**; 111 McInnis Parkway; San Rafael 94903; 415-507-5000; www.autodesk.com

John Kennedy was co-founder, president and COO of **Green Building Studio** in Santa Rosa, which developed a Web-enabled tool that allows users to assess the carbon footprint of schematic designs in minutes rather than days. Acquired by **Autodesk** in 2008, Autodesk Green Building Studio and Green Building XML, used with Autodesk building information management (BIM) tools and Revit software, form the crux of Autodesk's Sustainable by Design Program.

Aspects analyzed by Green Building Studio include whole building energy use and cost, water usage, wind energy and photovoltaic panel potential, natural ventilation potential, rain capture and low-flow capacity and carbon emissions.

With degrees in mechanical engineering emphasizing resource sustainability and top honors from San Francisco State University, Mr. Kennedy presented his resource sustainability thesis to the Clinton administration's interagency Material and Energy Flow Workgroup in 1997. He was one of 1,000 trained by the Al Gore Climate Project to give carbon footprint presentations to schools and businesses. -L.S.

Hugh Linn and Michael Long

Hugh Linn

Michael Long

Co-founders, **Kantharos Process Water Systems**; Napa; 707-252-3379;
www.kantharoswater.com

Hugh Linn, P.E., and Michael Long formed Kantharos at the beginning of this year as a joint venture to design, install and operate winery wastewater treatment systems after two years of development and testing with **Jackson Family Wines**. The system uses reverse osmosis together with a patented fouling-resistant vibratory shear enhanced processing, or VSEP, membrane filter supplied through a partnership with Emeryville-based **New Logic Research**.

In the Jackson proof-of-concept test verified by U.C. Davis, the system was be able to safely reuse 90 percent or more of the water for rinsing the inside of barrels, tanks and hoses while retaining three-quarters of the water heat used in cleaning and sterilization. It saved Jackson 70 percent of wash water. A full-scale version is being installed at a Jackson facility in Santa Rosa.

Mr. Linn, 44, is president and one of the partners in Napa-based civil engineering firm **Riechers Spence & Associates**, which will be analyzing winery needs for a Kantharos system. A LEED accredited professional, Mr. Linn and the 35-employee firm tapped government research-and-development tax credits in the past two years to develop water- and energy-saving technology such as what's behind the Kantharos system.

Mr. Long, 50, is chief executive officer of Napa-based **Heritage Water Systems Inc.**, which he founded in 1998. Revenue last year exceeded \$4 million as more companies are changing water management approaches and outsourcing that task.

"Outsourcing of services in potable and wastewater management allows the winery to focus on winemaking not compliance," Mr. Long said.

He's also president of operations and technical services for Kantharos. After graduating from U.C. Davis in 1983 with an undergraduate degree in environmental toxicology, he was a researcher in the state **Department of Fish & Game Water Quality Division** and for **Del Monte Foods**, a technical representative for **Nalco Chemical**, district and regional manager for **Grace Dearborn** and managing partner of **Ecochem**.

Because of concerns about the common potable and wastewater treatment and equipment cleansing chemicals sodium, chlorine and citric acid, Heritage has been promoting use of potassium, hydrogen peroxide and peracetic acid to allow greater use of recycled water in irrigation.

The company also developed the PondSentry system for automatically monitoring and controlling

wastewater pond treatment. It logs pond-dissolved oxygen, depth and acidity levels for regulatory reports Heritage compiles as part of its service, and the device activates aeration pumps only when needed to cut energy use. *-J.Q.*

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Paul Nahi

President, chief executive officer, **Enphase Energy**; 201 First St., Ste. 300; Petaluma, 94952; 877-797-4743; www.enphaseenergy.com

Paul Nahi's Enphase Energy is the first to market with a system that includes high-efficiency microinverters, communications and Web-based analytics to maximize energy harvest and simplify design, installation and management of solar projects. The systems increase energy harvest by 5 to 25 percent and reduce labor costs by about 15 percent.

Most recently, Mr. Nahi was the CEO of **Crimson Microsystems**, a fabless semiconductor company specializing in large scale SONET ICs for the telecommunications industry. Prior to Crimson, Mr. Nahi was the CEO and co-founder of **Accelerant Networks**, a semiconductor company that designed and developed intelligent multi-gigabit transceivers. He also held executive positions with **NEC Electronics** and **Diamond Multimedia**.

Under his leadership, Enphase Energy has raised about \$45 million in investment funding since it was founded in 2008. *-L.S.*

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Don O'Shei

Donald O'Shei

Chief executive officer, **AltaRock Energy**; 2320 Marinship Way Ste 300; Sausalito 94965; 415-331-0130; www.altarockenergy.com

Don O'Shei heads up one of the few geothermal companies in the world focused on Engineered Geothermal Systems. EGS involves using high-pressure injection wells to cause fractures in rock 3,000 to 5,000 meters below the surface. Water is circulated through the fractures where it is heated by the earth's molten core before being pumped to the surface to power turbines.

Unlike traditional geothermal wells that rely on existing sources of water to create steam, closed-system EGS wells can be placed anywhere hot rock can be accessed.

The company is currently developing a site in Oregon with \$24.9 million from the **Department of Energy**.

Mr. O'Shei previously served as the co-president and chief operating officer of **MidAmerican Energy Holdings Co.**, and as vice chairman, president and COO of **CalEnergy**, which developed and built power plants, including geothermal projects, in the U.S., Asia and Europe. *-L.S.*

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Terry Pfaff

President, CEO, **EDC Technologies**; 50 Executive Drive, Ste. A, Rohnert Park 94928; 707-829-8011; www.savegas.com; 19 employees with six in the North Bay; \$3 million in annual maintenance fee revenue; four offices in California

Terry Pfaff, 56, started EDC in San Jose in 1984 to develop systems that allow companies to manage energy use, primarily of natural gas, across a number of facilities. The company relocated to Sebastopol in 1989 and expanded to Rohnert Park last year.

Though the company has supplied systems to **PG&E** customers over the years, EDC currently has contracts with **San Diego Gas & Electric** and **Southern California Gas** to supply control systems

to the lodging and senior housing providers. These installations often lead to installations elsewhere in the end users' facilities nationwide, according to Mr. Pfaff.

Growth in work has increased steadily, particularly in the past four years, and he expects it to continue for the next two years. The greening of business has propelled demand for EDS' tools and services, as has the growth of Internet-linked "smart" building management systems. EDS won the smart power category in the 2006 Clean Tech Open competition.

"A lot has been spurred by the economy, but for the most part our customers do not buy into it because it's green," he said. "It is a tool to better manage properties and increase property values overall." -J.Q.

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Bob Rawson

Bob Rawson

President, **International Wastewater Solutions Corp.**; P.O. Box 157, Sebastopol 95473; 707-824-128

In addition to starting the company with partner **Victor Harvey** in 1999, Bob Rawson, 62, is general manager of the Graton municipal treatment plant and has been a wastewater technology instructor at **Santa Rosa Junior College**. Mr. Rawson's consulting work has taken him abroad, including consulting on projects along the Amazon River.

Mr. Rawson, who was involved with the Pirana compact alternative wastewater treatment system, and Mr. Harvey added a self-flushing feature. Mr. Rawson was part of a new patent on wastewater treatment technology received in December 2009.

Called White Knight, the product is marketed in the North Coast via **Septic Skeptic** and nationwide by **Knight Treatment Systems**. -J.Q.

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John Schaeffer

John Schaeffer

President, chief executive officer, **Real Goods Solar**; 27 Simms St.; San Rafael, 94901; 415-456-2800; www.realgoodssolar.com

John Schaeffer has been exploring renewable energy and sustainable living since graduating from U.C. Berkeley in 1971.

Over the last 32 years, he founded and grew **Real Goods Trading Co.** as its president from a garage startup to the foremost global source for tools and information on renewable energy and sustainable living.

In 1995, he created the **Solar Living Center** in Hopland, a 12-acre educational demonstration site. He founded and remains board chair of the educational nonprofit **Solar Living Institute** dedicated to promoting renewable energy through environmental education.

Under Mr. Schaeffer, Real Goods Solar acquired **Marin Solar** in San Rafael, certain assets of Hemet-based **Carlson Solar, Independent Energy Systems** of Santa Cruz, and merged with **Regrid Power** in Campbell.

Now a subsidiary of Colorado-based green lifestyle company **Gaiam Inc.**, Real Goods Solar Inc., has grown to a publicly traded company (NASDAQ: RSOL) that has installed systems in more than 5,000 homes. -L.S.

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Dan Thompson

Dan Thompson

Chairman, founder, **SPG Solar, Thompson Technology Industries**; 20 Leveroni Court; Novato 94949; 415-883-7657; www.spgsolar.com

Dan Thompson had 20 years in the electrical contracting and construction industry before founding SPG Solar in 2001. He leads the industry in the North Bay and is recognized internationally for his active participation in the photovoltaic industry.

Mr. Thompson is an innovator, spinning off Thompson Technology Industries to manufacture and sell its patented solar products to other installers. One of those products is the first floating voltaic system. The panels sit atop a water-treatment pond at **Far Niente Winery**, freeing up valuable acreage for vines and actually improving the water by retarding algae growth.

He was the only U.S. representative to speak at the 2004 International Congress on Renewable Energy in Bangalore, India. He contributes his experience and insights to developing state policy and legislation and has helped educate thousands of people at solar industry events and conferences.

Mr. Thompson serves as chairman of the board. **Thomas Rooney Jr.** is SPG president and CEO. -L.S.

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Daniel Wickham, Ph.D.

Dan Wickham

President, **SludgeHammer Group**; 336 S. Division Road, Petoskey, MI 49770; 707-874-9298; www.sludgehammer.net; six employees; 2009 revenue: \$20,000 in the North Bay, \$900,000 companywide

West Sonoma County resident Daniel Wickham, 64, launched SludgeHammer compact alternative wastewater system with **Buzz Jenks** in 2003. Company sales, now managed in Michigan, have expanded to the point where half come from international projects, such as a 400,000-gallon-per-day wastewater plant to be installed at a commercial facility in Libya.

However, the increasing number of failing North Bay rural septic systems and limited number of affordable alternatives as well as decreasing funds for municipal systems is widening the local market for alternative treatment systems, according to Mr. Wickham. The device has garnered recent certifications and code listings from the **International Association of Plumbing and Mechanical Officials, NSF Foundation** and **International Maritime Organization**.

Dr. Wickham earned his doctorate in marine ecology from U.C. Berkeley in 1979 while working as an ecology researcher for 20 years at the U.C. Bodega Marine Laboratory. During that time, he experimented with bacteria used to clean up petroleum spills. Isolating a strain that works on household sewage led to the creation of the Pirana compact treatment system with a group of Sonoma County partners who have since formed their own companies.

Dr. Wickham's name is on three patents for on-site wastewater treatment and two more are pending. The SludgeHammer system recently was adapted for wine industry wastewater. -J.Q.

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