



entrepreneurs for energy efficiency

the eeeluminator

The quarterly newsletter of E-3

www.e3energy.org

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Our mission: to promote successful commercialization of energy efficient technologies developed with the support of the Department of Energy's Inventions & Innovations

A Call to Action

Important News to all I&I Supporters

The FY 2007 Congressional Budget Request has been published. The complete text can be found at the link: http://www.mbe.doe.gov/budget/07budget/Content/Volumes/vol_3_ES.pdf

Entrepreneurs for Energy Efficiency (E-3) was founded in 2001 in response to the FY 2002 budget request to zero out the Inventions and Innovation program. Beginning with our original grass-roots effort, funding has been restored in the \$3 MM to \$ 5 MM range. This year's request is bad news in that it zeroes the budget for I&I rather than just reducing it to a close-out level. That makes it somewhat more difficult to get Congress to re-insert the line item. The Office of Energy Efficiency and Renewable Energy (EERE) is struggling right now. The budgets for Hydrogen, Solar, Wind, and Biomass / Bioenergy are increasing, but this is on the supply side of the equation. Funding is being cut in where the energy is used, Industry, Buildings, and Transportation. If one believes energy will be more expensive, whether measured by the price of the commodity or the cost to the environment, energy savings are realized through conservation and efficiency much quicker than through fuel cells or photovoltaics.

EERE has limited flexibility to keep programs alive because of earmarks. When the Conference Report was published for H.R. 2419 in November, a copy was downloaded from the Library of Congress' Thomas (<http://thomas.loc.gov>) legislative information site. The bill contains over 350 individual projects, totaling \$410,000,000. This is not money that Congress adds to the DOE's budget. The DOE has to cut funding from other areas to make up the difference. On

February 7, The National Renewable Energy Laboratory (NREL) reduced its staff by 32 people in order to resolve a \$28 million budget shortfall. Last year, more than 15,000 "Congressionally Directed Projects" totaled \$27 billion, up from 1,200, just ten years ago.

More than ever before, the salvation of the I&I will depend upon champions in Congress. Last year, responsibility for the DOE passed to the Committee on Appropriations, Subcommittee for Energy and Water-Related Projects. Our original champion, Sen. Conrad Burns, had been the Chairman of Interior subcommittee. This year, we were able to gain the support of Representative Denny Rehberg of Montana. It is imperative that E-3 convinces the Chairman, Senator Peter V. Dominici of New Mexico, that the I&I is worth saving. While the nine Republicans and eight Democrats who are on the Energy and Water subcommittee are our first priority, all I&I supporters need to contact their representatives. A map and table nearby lists the members of the Energy and Water subcommittees.

In the Budget Request, the justification for eliminating the I&I is:

1. Overlap with Small Business Innovation Research Program.
2. Technology development activities will continue in individual technology programs and in grants and activities funded through the State Energy Program.

Our message must overcome these two lines of reasoning. I&I is special because it doesn't require the inventor to fit into someone else's topic. The



SBIR is a great program and it has its purpose. It is not the I&I and should not try to be. Technology development in other programs runs in to similar problems. Cutting edge technology will always have many pursuers. The typical I&I grantee has a specific solution to problem that's out there in the real world. A great part of the American ethos is that the individual inventor can still succeed. These days it may take more than a garage and an idea and the I&I is there for that.

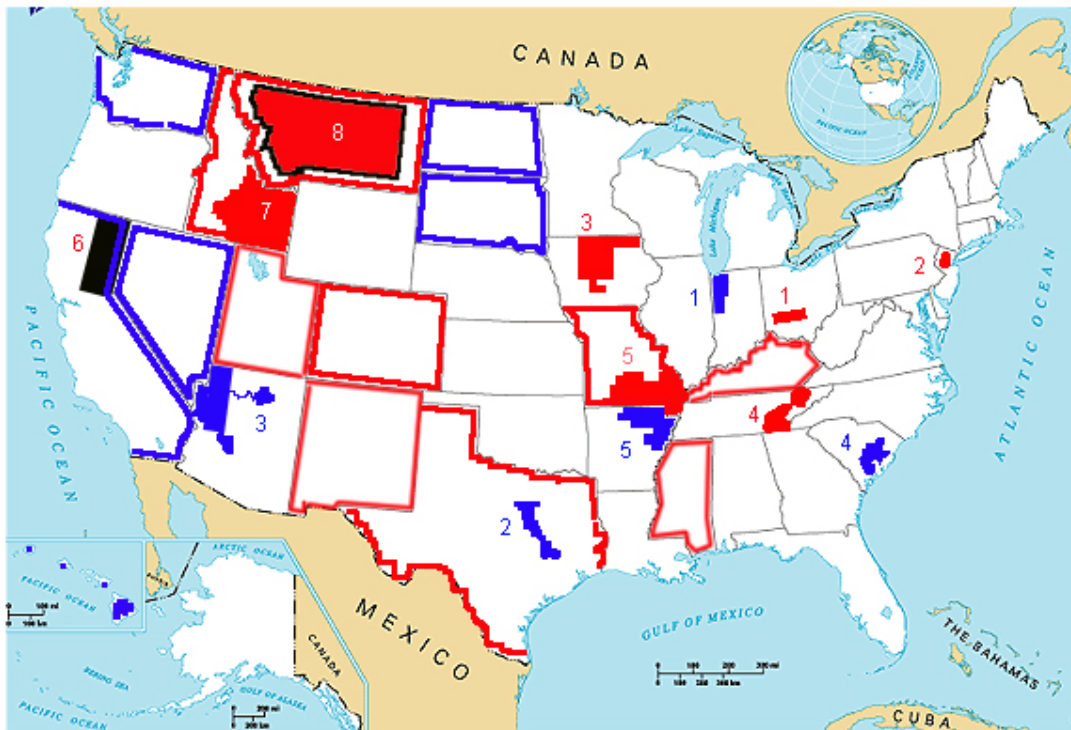
This is a milestone year for the continuation of the I&I program. If the E-3 membership believes that the I&I should survive, then everyone must go to their Senators and Representative. The action required of Congress means that winning necessary support will require not only letters but personal contact to insure that Senators and Representative understand the desire of constituents.

U.S. House of Rep

District approx.

- █ Majority (Rep)
- █ Minority (Dem)

- | | |
|---|--|
| 1. David L. Hobson (R-OH)
[Chairman] | 1. Peter J. Visclosky (D-IN)
[Ranking Member] |
| 2. Rodney P. Frelinghuysen (R-NJ) | 2. Chet Edwards (D-TX) |
| 3. Tom Latham (R-IA) | 3. Ed Pastor (D-AZ) |
| 4. Zach Wamp (R-TN) | 4. James E. Clyburn (D-SC) |
| 5. Jo Ann Emerson (R-MO) | 5. Marion Berry (D-AR) |
| 6. John T. Doolittle (R-CA) | |
| 7. Mike Simpson (R-ID) | |
| 8. Dennis Rehberg (R-MT) | |



U.S. Senate

State Outline

- █ Majority (Rep)
- █ Minority (Dem)

- | | |
|--|---|
| Sen. Pete V. Domenici (R NM)
[Chairman] | Sen. Harry M. Reid (D NV)
[Ranking Member] |
| Sen. Thad Cochran (R MS) | Sen. Robert C. Byrd (D WV) |
| Sen. Mitch McConnell (R KY) | Sen. Patty Murray (D WA) |
| Sen. Robert F. Bennett (R UT) | Sen. Byron L. Dorgan (D ND) |
| Sen. Conrad Burns (R MT) | Sen. Dianne Feinstein (D CA) |
| Sen. Larry E. Craig (R ID) | Sen. Tim Johnson (D SD) |
| Sen. Christopher S. Bond (R MO) | Sen. Mary L. Landrieu (D LA) |
| Sen. Kay Bailey Hutchison (R TX) | Sen. Daniel K. Inouye (D HI) |
| Sen. Wayne Allard (R CO) | |



WAL-MART Selects SOLARWALL for Heating at New Supercenter

Aurora, Colorado—November 8, 2005—Wal-Mart has proudly announced the opening of their new Aurora Supercenter in the metro-Denver area. This store is the latest in environmental sustainable design, and Wal-Mart has taken the position that it could profoundly change the way in which the retail industry designs, constructs, and manages facilities as it relates to the environment. Wal-Mart is a market leader in this regard, as they are the first of the big box stores to consciously mandate the incorporation of energy efficient technologies on one of their supercenters.

I&I grantee, Conservall Systems Inc. of Buffalo, NY is very pleased to announce that their SOLARWALL® solar heating technology was selected to be part of Wal-Mart's sustainable design strategy for displacing a significant portion of the natural gas heating requirements for the building.

The solar air heating system is expected to reduce annual energy consumption at the Wal-Mart Supercenter by 1,325 million Btu (388,000 kWh), and save the store over \$17,000 U.S. per year in displaced energy costs at current natural gas prices.

The solar heating concept is simple. The 8,000 ft² of grey metal cladding that forms the south exterior wall of the Supercenter heats up in the sun, and the ventilation fans draw the warmed air on the surface of the wall through the perforations in the panels and into the air cavity. This pre-heated air is then distributed throughout the building and auto service center by the conventional ventilation system. This "natural" pre-heating of fresh air means less natural gas is needed to heat the ventilation air required to maintain a high level of indoor air quality. The wall also acts as a solar shield, reducing solar heat gain and cooling needs in the summer.



Wal-Mart decided to actively showcase the energy-saving features with information screens throughout the stores, and a "walk of fame". Each energy technology involved in the process has a "star" in the store which describes their technology, and how it will reduce energy consumption and improve the working environment. The objective is to increase awareness and allow store patrons to learn about the different technologies, thereby mainstreaming the concept of energy efficiency.



Energetics wows Houston Technology Center, Energy Technology Venture Capital Conference

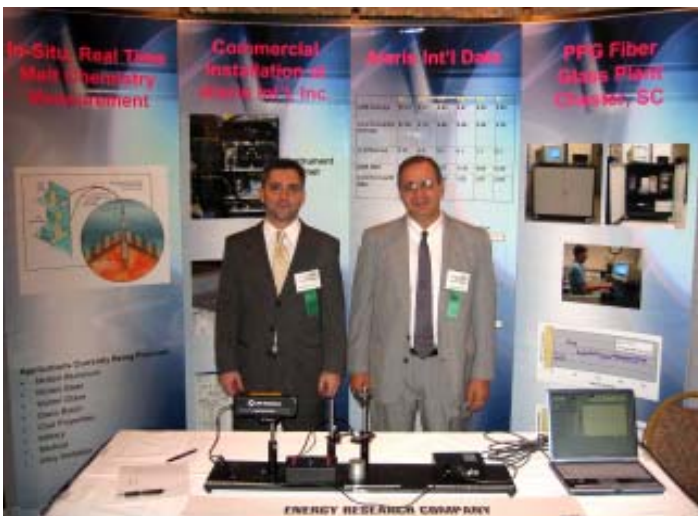
The Energy Technology Venture Capital Conference assembled a selective group of growing energy technology companies with an investor audience of venture capitalists, private equity and corporate investors, high net-worth individuals and related financial professionals. Subra Iyer, CEO and founder of Energetics, Inc., presented during the two day conference in Houston, TX, along with CFO Narendra Khera.

Energetics (www.nrgtix.com) is located at AccelTech, in Pomona, California. The company has technology alliances with the UC- Irvine, California State Polytechnic University, Pomona and Iowa State University.

The company is currently working on a Phase II SBIR grant from the Air Force Research Laboratory (AFRL), Department of Defense, for developing the basic science and technology for an amine-based fuel cell. Work is also continuing on a Navy – Center for Commercialization for Advanced Technologies (CCAT) grant for developing membrane technologies for the amine-based fuel cells.

Participation in industry forums and other venues that gain young companies exposure often are subject to the Law of Unintended Consequences (LUC). Energetics' market focus is portable power, replacing the Li-Ion batteries required for the Digital Battlefield. As LUC would have it, another company participating in the conference knew of another application outside the original scope of Energetics' commercialization plan.

Measurement-While-Drilling (MWD) systems measure formation properties, wellbore inclination and azimuth, drilling system orientation, and mechanical properties of the drilling process. The battery module in MWD tools provides power to the tool when there is no flow of drilling fluid to operate the generator. The battery modules currently in use have temperature limitations and limited run-time. This niche application could provide an additional \$50 MM of market potential.



Joe Crapano and Bob De Saro manning the booth at the DOE Opportunity Forum

Energy Research Company presents at DOE Opportunity Forum

The 2005 DOE *Opportunity Forum*SM is a unique event showcasing applications of technologies that have been funded by the Department of Energy's Small Business Innovation Research (SBIR) Program, DOE's Industrial Technologies Program (ITP) and the National Science Foundation's Small Business Innovation Research Program. Fifty-two (52) small, advanced technology firms made presentations during a two-day event.

Laser Induced Breakdown Spectroscopy (LIBS)

A patented laser instrument, for coal-fired power plants, allows regulatory compliance for mercury emission measurements, increases in electric generation, and reduced maintenance costs by reducing slag buildup. Annual benefits per plant are: reduced maintenance of \$300,000, increased electric generation revenue of \$14 million, and emission compliance credits of \$5.5 million. The US market for the LIBS system is \$123 million. In addition, the glass and aluminum markets will also be served.



Guest Author Series

E-3 presents the sixth in a series of articles by Dennis Gerschick, CFA, Attorney, CPA, VenCap Advisory Group

“Evaluating the Value of Patents” ©

By Dennis J. Gerschick, CPA, Attorney, CFA

Many companies seeking venture capital tout the value of their technology and point to their patent applications or issued patents to back up their claim. I, like most attorneys, am not a patent attorney. As a neophyte, I have many questions including: (1) Are all patents the same? (2) How can you tell a “good patent” from a “bad patent”? (3) What are the characteristics of a “good patent”? (4) What is the difference between a “strong patent” and a “weak patent”? (5) What do patents really do for a company? This article will start to explore these issues at a high level.

An important point is that not all patents are the same. Most people assume that a patent can stop a competitor from competing with the company. Whether a patent can effectively stop a competitor depends upon how the patent is drafted. More specifically, a patent application consists of one or more patent claims. Patent attorneys will refer to such claims as being either narrowly or broadly drafted. In theory, a broadly drafted claim may stop more potential competitors. If that were true, then it would seem logical that every company would want its patent claims to be broadly drafted. However, the problem is as the claim broadens, it becomes weaker and is more likely to be attacked. A more narrowly drafted patent claim may, in fact be stronger and may stop a potential competitor more effectively. However, as the patent claim narrows, the likelihood of a potential competitor drafting around the patent claim increases. In short, there is no single right approach and there is an inherent conflict between the approaches. Whether a claim should be drafted narrowly or broadly is a subjective matter of judgment. However, another important point is that many parties who apply for a patent do not focus on this issue and it is a critical issue. One option may be to file a narrowly drafted application and focus on the core technology that is important to the company’s business. Narrowly drafted claims are easier to defend. Later, the company could file a more broadly drafted application.

Patents do not guarantee success for the company. Generally, patents are a “defensive mechanism” which is intended to stop others from doing what the company does. However, it does not mean that what the company does, through its patent, is worthwhile or will be purchased by third parties at a price that will allow the company to be profitable. Many people think first about obtaining a patent and then consider how it can be commercialized. In many cases, the thinking should be reversed – that is, the parties should first focus on whether the patent can be commercialized or used in the business and then focus on getting the patent. The reality is that the U.S. Patent and Trademark Office (“USPTO”) issues more than 100,000 patents per year. Many of these patents simply sit in someone’s files and are never used. In short, perhaps millions of dollars are spent obtaining patents that provide no return. Some companies are starting to address this problem and realize that they should try to get some benefit from their patents. Consequently, they will often try to license their patents to a third party – obtaining some royalties is better than nothing.

I am aware of one company who sought venture capital. The management team bragged about the patent portfolio noting that the company owed more than 50 patents. The venture capital fund engaged a patent attorney to evaluate the company’s patent portfolio. The patent attorney was asked to consider how many of the patents were really needed to protect the company’s business. The answer? Five! The rest of the company’s patents were not really needed and, as a practical matter, could be thrown into a trash can. This came as a surprise to both the company and the potential investors. It appears that many patents are being issued due to the inventor’s ego. Who would not like to say that they invented something and received a patent? It is perhaps a natural desire to obtain a patent because it suggests that the inventor is smart and creative. However, for venture capitalists, the goal is not to find “cool patented technology” but rather to find a business that has potential to be very profitable in the future.

A significant disadvantage of a patent is that in order to obtain the patent, the inventor must publicly disclose details concerning their invention. Competitors can review any patent filing that has been pending for eighteen months or has already been issued. There



are also some potential problems with not obtaining a patent. One, can the company really keep the invention a secret? Two, a competitor may obtain a patent on the same technology and either force the company to pay a royalty or sue it for patent infringement. If the company does obtain a patent, a competitor may use the publicly disclosed information. They may be tempted to "reverse engineer" or achieve the same result by using a different method. Can a competitor design around an issued patent? In many cases, the courts have held that a competitor can properly do so. Instead of assuming that obtaining a patent is the best way to protect the company's technology, companies should also consider whether they can maintain the secrecy of its technology. Keeping the knowledge as a "trade secret" may allow the company to maintain a competitive advantage as long as the knowledge remains a trade secret. In contrast, patents have a limited life, under current law, of 20 years from the date the patent application is filed with the USPTO.

Assume an early-stage company obtains a patent and finds out that another company is infringing its patent. What should it do? What can it do? As a practical matter, the first step may be to send the infringing party a "cease and desist" letter. If the infringing party continues to infringe the patent after receiving such a letter, or if they otherwise knew they were infringing another's patent, they may then be subject to treble damages due to their intentional infringement. Many companies receiving such a cease and desist letter will engage patent counsel to write them a "well-reasoned" opinion letter stating that their actions do not infringe the patent, as alleged, so they are not liable for treble damages. What is the patent holder to do then? Patent litigation is often a long and expensive process. Many early-stage companies simply do not have the money to finance lengthy litigation. Larger, better-financed companies, know this fact and take advantage of it. Should an early-stage company, that has patented technology, simply admit that it does not have the resources to fight third parties who infringe their patents? Should such companies simply license their patents to better financed companies, who have the resources to engage in patent litigation?

The above is not to suggest that patents are worthless or should not be pursued. To the contrary, patents

can be invaluable. I am simply suggesting that early-stage companies would be better served if they thought about their patent strategy more intently **before** spending money to obtain one or more patents.

Note: Dennis Gerschick wishes to acknowledge the insightful comments made by David Perryman, Esq. who reviewed a draft of this article. However, any remaining errors are the author's alone.

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