

# ENVIRONMENTAL BUSINESS JOURNAL®

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SITE REMEDIATION 2007

Environmental Business International Inc.

## TERRATHERM RESPONDS TO INTERNATIONAL DEMAND FOR THERMAL TECHNOLOGY

Building upon seven years of success in deploying its In Situ Thermal Desorption (ISTD) technology, **TerraTherm, Inc.** (Fitchburg, Mass.; www.terra-therm.com), is now gearing up to meet both national and international demand for thermal approaches to remediating volatile organic compound (VOC) and semi-volatile organic compound (SVOC) contamination of soil and groundwater. Having accumulated a library of performance data to demonstrate the technical merits and cost-effectiveness of ISTD, the firm was hiring its first full-time sales person, in particular to go after the international opportunities. "We've definitely moved past the start-up stage," affirms TerraTherm CEO Ralph Baker. "We're well up the learning curve in terms of technology development and building the internal systems that start-ups don't have, in terms of having built a repeat client base and having a technology that is proven."

Last year, TerraTherm, which is backed by **Bison Capital** and the **Massachusetts Technology Development Corp.** (MTDC), generated about \$5.4 million in revenues, representing about 20% growth over the prior two-year period. Profits have grown 139% over the same period, attributable in large measure, says Baker, to the return on earlier investment in the capital asset fleet, which is not inconsiderable for a thermal technology. The clientele is heavily weighted towards the private sector, including Fortune 500 companies, chemical makers, utilities, manufacturing firms, and developers.

TerraTherm was a 2006 EBJ Business Achievement Award winner, recognized for completing what the company describes as the largest *in situ* thermal cleanup of a wood treatment site to residential cleanup standards. The site was a former utility pole treatment facility, operated by **Southern California Edison** (SCE) from 1922 to 1957. The achievement of stringent remedial goals means that the property is not subject to land use restrictions, allowing for all redevelopment opportunities, including residential

housing—a result that TerraTherm claims as a distinct competitive advantage for the ISTD process. The only alternative capable of meeting the unrestricted land use requirement was excavation and off-site incineration. TerraTherm's ISTD technology utilizes the simultaneous application of thermal conduction heating and vacuuming to treat contaminated soil without excavation. The applied heat volatilizes organic contaminants

within the soil, enabling them to be carried in the vapor stream toward heater-vacuum wells. The ISTD project saved the client approximately \$12 million in cleanup costs, Baker says.

The technology has proven effective at removing contamination under a wide variety of challenging conditions, Baker affirms. It has been used to remove chlorinated solvents both above and below the water table, it has performed capably at manufactured gas plants (MGPs) and other coal-tar sites, and it has been deployed successfully to heat deep bedrock, Baker notes. Furthermore, he adds, "we're showing that the cleanup of

### U.S. Site Remediation Market 1993-2006

	1993	1999	2005	2006	2006g
DOE	1,000	1,760	1,940	2,000	3%
DOD	970	930	1,210	1,210	0%
Superfund (EPA & PRP)	1,180	710	460	460	1%
State Programs	430	260	260	270	3%
RCRA	910	590	450	470	4%
Priv/Reg USTs	1,040	590	440	460	3%
Private/Non-Regulatory	950	1,230	2,190	2,400	9%
Total	6,480	6,070	6,960	7,270	
Remediation Construction	49%	60%	56%	57%	
Assessments & RI/FS	24%	20%	22%	21%	
Remedial Design	21%	13%	14%	14%	
Closure & Monitoring	6%	7%	7%	7%	

Source: Environmental Business International, Inc., San Diego, units in \$mil

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DNAPLs is not only possible but routine.”

### A ROSTER OF PATENTS

In addition to the ISTD technology, TerraTherm has patents for two other thermal technologies—steam-enhanced extraction and electrical resistance heating. According to John Bierschenk, the company’s president and general manager, TerraTherm is the only provider of thermal treatment remedies that can claim to offer three patented technologies. He adds that patents for the firm’s technologies have been issued or are pending in about 30 countries.

Today, better than 70% of TerraTherm’s business is coming from work outside the United States. “We’re doing active projects in the United Kingdom, through a sublicense with **AIG Engineering Group**,” notes Bierschenk. “We’ve also done a number of projects in Denmark.” As of this writing, projects were ongoing in Brazil and Australia and set to commence in France and Germany.

“Clearly there’s an appetite for these technologies in some of the more technically advanced countries,” Baker observes. These countries have numerous waste sites that haven’t been addressed because they present difficult cleanup choices, he remarks, and excavation for off-site disposal is viewed less and less as a viable option. “Why move your problem to a landfill that ends up being a new cleanup liability?”

The industrialized nations of Europe are particularly ripe for thermal destruction technology, Baker adds, because of several factors, including the density of the populations, the premium on usable property, the concern about groundwater resources, and directives limiting landfilling. Denmark, Netherlands, Belgium and the United Kingdom are particularly active in addressing legacy contamination and have been very open to *in situ* thermal treatment, Baker says. By comparison, Germany, France, Italy and some of the other European nations are a bit behind.

TerraTherm performs all of its cleanup work on a guaranteed fixed-price basis. “As we explain to our potential customers, the best value is with a risk-sharing type of arrangement, rather than a transfer of the risk to us,” Baker explains. John Bierschenk adds that convincing clients to undertake a project on a risk-sharing basis can be difficult at times, “but they are getting more sophisticated, and they have sophisticated consult-

ants.” If it’s required that TerraTherm must accept all risk, he continues, “and we still see the project as a good opportunity, we’ll add a premium to the price. If we don’t like the circumstances and conditions, we’ll say no.” In addition, bonding is expensive to obtain these days, and a requirement on the part of the client to obtain bonding can be a “show-stopper.”

The accumulation of performance data obviously has facilitated the screening of potential opportunities, Baker points out. “We’ve evolved from the point of not having nearly as much of a handle on what it costs to put systems in the ground, and how long they will operate, to being more confident about the cost of doing business.

Projects tend to operate much closer to predicted timeframes now. That helps us a lot in terms of improving our ability to qualify projects going in.”

TerraTherm is doing an increasing amount of sole-source work and doesn’t do a tremendous amount of RFP bidding, Baker remarks. Going forward, he observes, the business model envisions the establishment of teaming and sub-licensing arrangements (TerraTherm itself licenses the ISTD technology from the University of Texas at Austin, and from Shell Oil, the original developer, in international markets). The inquiries have been coming in the door so rapidly, Baker says, that sub-licensing will be necessary to keep up with the opportunities. ■

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