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Protecting our Resources – The Drive for Clean Water, Energy and Supply Security

Alternative Energy Technology and Water Purification Systems Provide Solutions

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The pursuit of traditional sources of power to meet the growing demand for energy has placed considerable worldwide pressure on our resources. Not only have energy prices continued to grow, but our centralized grid system and the environmental consequences of fossil fuel production, has established a ripple effect that includes energy dependence on foreign sources of oil, infrastructure and energy vulnerability as well as a compromise of critical resources such as water.

As explained by Dr. Robert Wilder, CEO and President of the Wilderhill Clean Energy Index (ECO), “Independently speaking, the fragility of our oil and gas supply merits I believe, paying increased attention to growing domestic renewable energy resources, like solar and wind. Hurricanes Katrina and Rita pointed out how vulnerable we are to disruptions, from the acute weather events which have to be expected. But we also have to be more resilient against terrorism events, domestic and abroad, that could also curtail our supply. That amplifies the case for clean energy here at home.”

The recent hurricane’s Katrina and Rita highlighted the extraordinary importance and value that water plays in our lives. Neil Berlant, First Vice President and Managing Director Water Group, The Seidler Companies describes, “Without water nothing is manufactured or grown, and even more dramatically, without water we die. There were many tragedies associated with the hurricane’s, but among the largest is how the emergency response showcased how fragile our infrastructure is, and how dangerous the decades of neglect is to the well-being of our cities and lives.”

Addressing Costs

Energy Prices:

As oil and gas prices continue at high price levels, affordability issues have hit consumers and industries hard. Prices have risen to the point where renewable energy options that historically have been more expensive than fossil fuels have become a financially feasible alternative in most cases.

The rise in energy costs is neither a new phenomenon nor one brought on merely by the disruption in production due to an influx of recent storms. “For a number of years now we have seen a fundamental change occurring in the costs associated with the delivery of a kW of power,” states Tom Djokovich, CEO of XsunX, Inc. “Non renewable energy production costs have continued to rise while conversely the cost per kW for renewables has continued to decrease. This trend is a wake-up call to the stark reality that sweeping and fundamental changes are occurring in the supply side economics of power production.”

The advantage to renewables, which has gained momentum in these times of high energy prices, is that the costs associated with renewable energy products is realized in the technology itself rather than the energy source. “The beauty of renewables is that the costs of energy like solar and wind are mainly technology based, the cost of technology to harness them. The resources themselves are free. When the cost of the wind turbines and solar cells come down, the overall costs of renewables comes down,” states Dr. Wilder. Historically the cost of technology goes down thereby increasing the affordability of alternative energy sources. As explained by Dr. Wilder, “Wind is now competitive with oil and coal and cheaper than nuclear power so it makes sense in its own right. Solar still needs subsidies, but its costs are being recouped more quickly as prices decline annually.”

The changing aspects to the economics of delivering a kW of power have caught the attention of government’s and private investment worldwide. Government sponsored initiatives and a flood of private investment dollars aimed at research and development of new delivery methods and applications of renewable technologies have begun to accelerate the planning and adoption of distributed generation and smart grid technology.

Environmental Concerns:

A significant by-product of the pursuit of traditional sources of energy is the damage and risk placed upon the surrounding environment. Coal when it is burned as fuel results in harmful emissions that impact our air and water. Coal mining efforts, which often come into contact with water resources, have led to significant damage to ground and surface waters. Converting fossil fuels into energy has also created environmental problems through the creation and disposal of waste.

The economic impacts in the use of fossil fuel sources have only recently begun to be considered when factoring the true cost of power production. “Tracking the continuous decline in the condition of two of our most valuable resources, air and water, provides us with a postcard from the future pointing to the costly environmental and economic impacts of continued unabated reliance on the use of fossil fuels. Investing in clean renewable technologies now mitigates the

impact on our air and water supplies and will allow future dollars that would have gone towards the clean-up of environmental impacts to go toward the development of new advanced clean energy sources," states Djokovich.

Complicating the ability of the nation to provide clean water is the poor condition of existing infrastructure and the reactive rather than proactive approach taken. In addition, by being reliant on a central treatment system, similar to the risks to our centralized power grids, water resources are at risk from damage caused by disasters both natural and man-made. "The nation has woefully neglected the aging and deteriorating infrastructure of the water distribution and treatment systems. The millions of miles of pipes transporting waste and clean water are aged and in need of repair. Those that are buried underground tend not to be a subject of attention until there is a problem, such as a pipe break or contamination. At that point the emergency response teams jump into action. A more dangerous situation is where the water supply becomes contaminated and emergency clean water must be secured. That clearly shows how risky it is to only rely on central treatment of water," explains Berlant.

The water industry is also facing waste issues through problems associated with septic seepage, according to a Company representative from Pentair, "One of the growing issues on the horizon relates to managing waste water. It is particularly challenging in the context of the increasing concerns surrounding water rights and availability in the South Western U.S. and parts of Florida. In many cases, septic systems are inadvertently polluting groundwater and public entities have realized that there is a need to better manage waste water."

Turning Need Into Opportunity:

Companies all over the world are working to protect, repair and provide critical resources in a variety of ways, opening the doors of opportunity across a plethora of markets. On the renewables side, companies are focused on a diverse range of viable alternatives to traditional energy sources from solar, wind and fuel cell technology, to biomass, wave energy and more. Not only are companies looking to supplement and replace energy supplies, but through innovation businesses have developed alternative sources of clean energy that is efficient, cost effective and environmentally conscious. Technology that satisfies the problems associated with rising energy demands and the growing urgency and prioritization towards energy security and independence.

Putting small scale power generation at the customer point-of-use in order to provide independent sources of energy that runs parallel to the grid is Distributed Energy Systems (DESC). As Walter "Chip" Schroeder, President explains, "We see strong confirmation that the fundamental driver of our business -- the increasing demand by end users to gain more control over critical energy resources -- is gaining momentum. One of DESC's inherent strengths is that we can meet this demand with a diverse set of products, projects and technology innovations that are right in line with the needs of the new energy marketplace."

Realizing that technology helps to differentiate the classes of value and deliver redundancy, reliability and efficiency where there is a value proposition for it, Distributed Energy's hydrogen products, while currently being used in high value industrial markets, have long term expectations that include the placement of units in gas stations and even homes for the purpose of making the hydrogen for fuel cell vehicles with the electricity used to power these generators coming from

wind and solar technology, according to Schroeder.

Changing the way the production of energy impacts our environment may find some of its largest opportunities in how we use our living and working environments to draw the most from, explains Djokovich. “XsunX, Inc. believes that the application of solar power technology onto common building materials such as the glass facades of buildings may, in many ways, provide more value and return than simply striving to improve efficiencies alone. In other words, the greatest efficiency gains may lie in how and where we use solar technologies and how these applications promote wide scale use.”

Companies within the water sector have developed technology that range from finding new supplies of drinkable water through desalination, to atmospheric extraction. In addition, water companies are working to repair and control existing water sources through filtration and purification processes. Pentair acknowledges that while solutions are not necessarily easy, they are available. “One of those solutions can be found in a business we acquired earlier this year called Delta Environmental. They manufacture waste water treatment systems for residence and commercial on-site treatment. In essence, these are aerobic treatment units with self-contained tanks that accelerate the breakdown of waste. It not only contains the waste water but allows for a faster and more thorough breakdown of solids and contaminants, thereby providing cleaner water sooner in the treatment cycle.”

Many experts describe Point-of-Use (POU) devices as an effective solution for the elimination or neutralization of contaminants in water. Such devices are located at the point of water consumption in homes, businesses etc. Neil Berlant describes these systems as a long term solution to water treatment problems, “even if something gets in the distribution system, the home system will provide backup treatment, ensuring that the home continues to have good quality water. The point is that with a distribution system that is fragile and in need of maintenance, we would be best served if the final treatment occurred at the point of use. I believe that over the next 5 years, we will see water utilities offer, as a regular product, POU systems on a sale or rental basis. This will provide the home owner with substantially better water quality, ensure against contamination occurring after the water leaves the central treatment system, and offer the prospect of a significant new business for the water utilities. In my view, everyone wins under that plan.”

Devices for Point-of-Use treatment include water purifiers attached to taps, and, most recently Atmospheric Water Generators (AWG). Hendrx Corp’s AWG products extract moisture from the atmosphere and transform it into pure, healthy, drinking water. As described by the Company, atmospheric water is almost always accessible, regardless of geographic location or season, thereby creating a means of addressing the growing water scarcity problem and declining health of worldwide aquatic ecosystems.

Governmental Support

While President Bush’s Energy Bill has many in the renewable energy sector smiling, the push for the adoption of renewables has largely stemmed from the state level through various initiatives such as net metering or renewable portfolio standards, which has led to advantages such as economic growth, energy security, supply relief and environmental protection. As Dr. Wilder

describes, “The states have been acting in part because the federal government has not been as fast moving and in part to simply create jobs to create wealth for its own citizens. By keeping these dollars here rather than sending the money to hostile countries we are developing domestically. In addition as is the case of biofuels, we are helping America’s farmers in our own mid-west.”

California is aggressively pursuing renewable energy technology through programs such as the Million Solar Roofs Initiative (MSR), which aims at obtaining this number by 2010 with technology that includes photovoltaics, solar water heating, transpired solar collectors, solar space heating and cooling and pool heating according to MSR.

Pennsylvania Governor Edward G. Rendell has been implementing his strategy for state energy diversification, independence and environmental conscious production. As a result of his initiatives Pennsylvania currently has one of the most progressive renewable energy portfolio standards that outlines a plan to have 18% of energy production to come from renewable sources in 15 years, in addition to being one of only two states that include energy efficiency within their standards. Environmental Protection Secretary Kathleen A. McGinty states, “Now is the time to invest in projects that stabilize energy prices, promote job development, improve the environment and enhance homeland security. As traditional energy costs rise, alternative energy projects not only become more competitive, they also make more sense.”

As regions deal with water problems such as septic waste groundwater contamination, some Government’s have mandated point-of-use systems to help eliminate these issues on an on-site basis, rather than through a central cleaning system such as in areas within the Caribbean. “This type of regulatory thinking is already evident in other regions such as Nevada, Arizona, parts of California, Texas and Florida. This would help address issues of limited access to freshwater and the rapid development of regions not served by central station waste water treatment facilities,” discusses Pentair.

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Ann-Marie Fleming completed her MBA in the United States, where she attended Webster University. She also holds an Honors B.A from the University of Toronto. She has over fifteen years of experience within the financial industry to include retail banking and brokerage, investment banking, and mortgage brokerage within the United States and Canada, with a firm background in corporate research.

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