OVERVIEW

SAIL CAPITAL PARTNERS (www.sailcapital.com)

SAIL was founded in 2002 as a pioneer in the cleantech investment sector and continues to be one of the sector’s recognized thought leaders. Our comprehensive portfolio currently includes fourteen leading companies spanning the universe of sustainable innovations in the areas of energy storage and efficiency, renewable fuels, electrical efficiency, green cleaning products and water purification.

In this era of profound changes in the way we produce and consume valuable resources, SAIL focuses on exceptional profit opportunities as a result of inefficiencies in the global markets. Our tea of uniquely talented investors employs their decades of experience and cleantech-related networks to the most exciting venture investment opportunities.
For the last ten years all scientific evidence has shown that the global supply and demand curves of energy, water and food separate increasingly into the future as far as we can see. And yet on a relative basis only a small fraction of the world’s financial capital has been applied to solve this most fundamental of all challenges to the future of civilization.

In order to mitigate this separation of supply and demand and to cause those curves to reverse direction and converge, it is necessary to invest more public and private capital in new energy, water and agricultural technologies. At the same time, it is important to encourage greater energy, water and agricultural efficiencies in all forms, regardless of the source of energy. And yet we know that the climate change and pollution effects of our activities are ultimately painful limits on our ability to increase the supply of energy, water and food.

This acute and growing imbalance of global resources would be by itself a cause for concern; but when combined with the gradual but real effects of climate change, pollution, and the widening disparity between the world’s richest and poorest people, this imbalance becomes a platform for a potential breakdown in civilized order. Other contributing causes to potential global instability include rising societal tensions in the Middle East and North Africa, persistent structural unemployment, intensifying cyber threats, and the increasing use of resources by the expanding middle class in Asia, all as reported in the World Economic Forum’s Outlook on the Global Agenda 2014 (available on the Forum’s website at www.weforum.org/reports).

We should not be surprised to see governments increasingly tempted to use greater digital invasions of privacy in efforts to monitor, control and correct outbreaks of terrorism and instability in larger populations.

The mitigation of climate change requires that the production, distribution and use of energy must become
more efficient and cost effective. Energy efficiency, including more effective recycling of all waste into energy, is increasingly necessary to mitigate climate change; but it also lowers costs and enhances the production of wealth and the stability of civilization.

The latest information from the leading climate experts at the University of California at Irvine and the National Academy of Sciences reveals a number of important facts as climate data continue to be updated and extended at least through 2012 and in some cases to today:

- Air temperature averages over the whole planet have remained higher than previous reference periods, such as 1950-1980. More air temperature record highs have been recorded recently than record lows, probably by a ratio of more than two to one. However, global averaged air temperatures in the last few years have not risen above the three very highest years (1998, 2005, and 2010), all of which are of course fairly recent.
- No matter what the cause, both ocean surface and deep water temperatures are continuing to warm almost every year.
- Arctic sea ice in the summer has continued to cover less of the ocean, faster than predicted, and multi-year sea ice is diminishing faster than expected. Arctic passages are becoming more open. Data on this phenomenon are now available daily.
- There are new results regarding ice suspended in Antarctica and Greenland the loss of which raises the sea level. Antarctic loss is accelerating overall, although we see differences east to west., and Greenland is continuing to decrease.
- The sea level continues to rise. Precise measurements over the whole earth are updated frequently.
- Finally, extreme weather events are becoming more frequent, such as intense precipitation in wet areas and longer dry periods in dry areas, and they have now been experienced on several continents.

As a result of all these factors, a substantial amount of research is being done on the potential impacts of climate change on both US national security and global security.

On the one hand, we must close the gap between the supply and demand of energy, water and food. On the other hand, we must do so within the strict limits imposed by the laws of science and nature. To be successful, we should invest in fundamental innovations in the businesses of energy, water, and agriculture, and we must build companies capable of solving these problems in a sustainable manner for profit, which is the ultimate assurance of sustainability and reliable progress.

To date, those of us who have been private investors in technology solutions to the world’s most serious problems have been to some extent marginalized by the widely reported failures of several early cleantech investments. That, in turn, has triggered and justified greater capital scarcity even for worthy venture investments. And yet we know from the history of technology that almost every visionary advance has been marred by a series of unfortunate failures and disasters—from railroads to aviation, from medical devices to biotech. If failure in the first phase of innovation in any of these areas had been followed by a permanent departure of capital and courage, we would not today enjoy the high standards of living and health that are once again imperiled by a new and different class of challenges.
CNS RESPONSE BETS BIG ON BRAIN WAVES

CNS Response is aiming to revolutionize the practice of psychiatry. It uses the brain waves of patients to identify medications that will give them the greatest relief from mental afflictions such as depression, anxiety and post-traumatic stress disorder.

The company has caught the eye of a major institution with enormous moral and financial stakes in treating mental health problems: the U.S. military.

The idea is to provide an objective, scientific test that psychiatrists can use to prescribe psychotropic drugs with greater certainty than they do at present. The prevailing method is generally one of trial and error, which translates to protracted patient suffering, inflated medical costs, and many ineffective therapies that need to be changed.

“What the leaders in medicine have been wanting for decades is an objective reference test based on neuroscience that will predict response to these medications,” said George C. Carpenter, the CEO of CNS Response. “We’re one of the first.”

The Walter Reed National Military Medical Center in Bethesda, Md., is in the early stages of a clinical trial using CNS Response’s cloud-based software, known as PEER Interactive. The software includes a database of brain waves from more than 9,600 previously treated patients, along with information showing how they responded to various drug treatments.

The potential demand for a technology like PEER is enormous. Since 2001, more than 2 million U.S. military personnel have served in Afghanistan and Iraq. About 40 percent of them struggle with mental health problems after returning home, according to one study by the Department of Defense. The suicide rate among U.S. veterans is twice the rate of the general population, according to the American Psychiatric Association. About 22 veterans kill themselves every day.

Carpenter believes that if the Pentagon endorses PEER and military psychiatrists begin using it, word will spread quickly to the civilian population, and business will surge.

One psychiatrist who sees the value of PEER is Andrei Novac, who has a private practice in Newport Beach and is a professor of psychiatry at UC Irvine. It makes sense to group patients by their EEGs, he said, because brain-wave patterns—not specific diagnoses—have been correlated with responses to medications. “So people with similar brain waves might have different conditions but the same medication would be effective on them,” he said. “In the best of worlds, we should do an EEG immediately when a patient comes in, before any medication has been tried, because that will already direct you towards a small group of medications to which a patient is most likely to respond.”

Novac notes that many clinicians are reluctant to prescribe the PEER test because it is expensive and patients have to pay out of their own pockets. “But hopefully insurance companies will realize that cutting the time from evaluation of the patient to getting a positive result is a big advantage and saves money,” he said.

Patients who undergo two or more failed treatment regimens for mental health problems cost insurers four times more than others, because of increased doctor visits, outpatient claims and hospital stays, according to a study by Analysis Group, a Boston based consulting firm. In the military, the cost is six times higher, the study showed.

In a commercial, non-military setting, PEER reports with EEG included would go for about $800 a test. Carpenter estimates the total market opportunity at $2.7 billion. “So we have a lot of room to run under that,” he said. “We think, reasonably, we ought to be able to do $50 million in revenues in a two- to five-year time frame.”

Ultimately, Carpenter hopes to expand the use of the technology to include pain medications, Alzheimer’s treatments and nonpharmacological therapies. “The common denominator is the brain as an electrophysiological organ,” he said. “It responds to medication or electrical stimulation in different ways, and we’re all different. We capture that variance in a way that allows us to reduce the number of trials and errors, so we can significantly improve health outcomes and reduce cost.”
Government-owned Puerto Rican electric power company Autoridad de Energia Electrica (AEE) has made it mandatory for developers of renewable energy projects to incorporate energy storage into new installations.

Xtreme Power, who has built the control systems for nearly 100 megawatts of grid-scale energy storage systems around the country, is now taking orders for delivery of systems that are compliant with Puerto Rico’s new MTRs, said Ryan O’Keefe, Xtreme Power’s vice president of business development.

The new Minimum Technical Requirement (MTR) regulations have been introduced with the aims of minimizing the impact of adding extra renewable energy capacity to the grid and reducing the level of infrastructure investment required to accommodate it.

Under new regulations, operators of renewable energy projects will be required to add 30% of the installation’s rated capacity in storage to aid frequency control. Also required is the ability to keep 45% of the project’s capacity in reserve for at least one minute for ramping control to compensate for fluctuations in generated power from variable sources.

According to AEE executive director John F. Alicea Flores, the company, which has a national monopoly on electricity generation, transmission and distribution through the grid and serves as regulator, recently completed a series of evaluations to find a realistic level of compliance that developers could meet.

In order to lower electricity prices for ratepayers and to make it easier to add new sources of electricity generated by renewable projects, the government announced in October that it would begin renegotiating power purchase agreements (PPA) with project developers. If negotiations are successful as expected, AEE will agree to purchase electricity from a number of renewable projects. Project proposals have been submitted from 64 developers, 15 of which are in the process of negotiating PPAs under the new MTR standards, according to local news sources.

In January 2014, the government of Puerto Rico will launch a new drive to procure 600MW of renewable energy capacity by the end of next year. This would represent a 5% increase in energy generated from renewables in the Puerto Rican national energy mix (from 1% at present to 6%).

Additionally, Puerto Rican authorities have announced that proposed renewable energy projects on “sensitive” or agricultural lands will be rejected.

To date, although energy storage has been recognized as a possible solution to providing adequate frequency control and ramping control to electricity transmission and distribution infrastructures, only authorities in California, Germany, and Japan have introduced policy measures aimed at adding energy storage to networks.
Ener-Core, Inc. (ENCR), whose proprietary Gradual Oxidation (GO) technology and equipment generates clean electric power from low quality and waste gases, announced that ROTH Capital Partners, LLC initiated equity research coverage on the Company with a "Buy" recommendation and a 12-month price target of $2.50 per share. The 17-page research report was authored by Phillip Shen, Senior Research Analyst at ROTH Capital. Below is a summary of the findings:

ROTH believes ENCR is poised to unlock large new markets for turbine OEMs. The company’s gradual oxidizer technology enables turbines to (1) generate power from previously unusable, low-energy content fuels and (2) produce materially lower emissions vs. conventional turbines. ENCR’s addressable market is large, and its sales/distribution strategy is compelling. As a result, ROTH initiated with a Buy and a $2.50 PT.

**ENCR opens up >$110bn in previously unaddressable markets for turbine manufacturers.**

ENCR’s GO technology can utilize low-energy content waste fuels, such as landfill gas or ventilation air methane, while producing very low emissions. Moreover, because the fuel that GOs can use is often wasted, projects incorporating ENCR’s technology can benefit from free feedstock. According to ROTH, this is a critical factor that likely enables attractive levelized costs of energy (LCOE) for ENCR’s products, as fuel costs often comprise >60% of the LCOE of a conventional turbine.

**Turbine OEMs are expected to embrace ENCR’s novel technology because it does not threaten existing markets.**

ENCR’s GO technology essentially replaces a gas turbine’s conventional combustion chamber and is fitted to the turbine via a bespoke interface. ENCR’s GO complements turbines as it allows them to utilize previously-unusable, low-BTU content fuels or enables their use in areas with stringent emissions standards.

**As a result, ENCR is expected to leverage the global sales/distribution footprints of turbine OEMs.**

This should lower ENCR’s costs of establishing a distribution network and enable a faster path to commercialization. This allows ENCR to focus on its core competencies, which include providing technical support for end users, integrating its GO technology into larger turbine platforms, and expanding its GO offerings.

**ENCR is in the early stages of commercializing its technology.**

The company recently shipped its first commercial FP250 (250kW) order to a Netherlands landfill facility operated by Attero, a leading waste management firm. Additionally, ENCR is in the process of developing a larger 2MW product with turbine OEM Dresser Rand. While the path to commercialization is not without challenges, ENCR has a gamechanging technology for the turbine industry. As a result, ROTH initiated with a Buy rating.
The US Department of Energy released its Grid Energy Storage report to the members of the Senate Energy and Natural Resources Committee, identifying the benefits of grid energy storage, the challenges to be addressed, and the current efforts being made to meet these challenges.

In response, the Electricity Storage Association (ESA) publicly praised the report, noting that “it affirms that wide-scale deployment of storage technologies in the U.S. and around the world is critical to maintaining a resilient, cost-effective electric grid.”

“The ESA is pleased that the Department of Energy will be providing analysis, tools, and opportunities for public-private partnerships—playing to the strengths of the agency while enhancing the ability of the energy storage industry to move forward with commercialization,” said Darrell Hayslip, Chairman of the ESA. “The report certainly reinforces our view that storage is an essential component to a more resilient, reliable, and balanced energy grid. ESA believes that it is not a matter of whether storage will be deployed; it is a matter of how fast it occurs. Given the focus indicated in this report, DOE is poised to assist in those efforts.”

“Energy storage is a vital component of a more resilient, reliable and efficient electric grid,” said Energy Secretary Ernest Moniz. “We must continue developing innovative energy storage technologies and finding new ways to ensure wider adoption to help move the nation closer to the grid of the future.”

The DOE noted that energy storage is ultimately necessary now more than ever, given the increasing trend towards renewable energies which are inherently unstable in their energy production. Incorporating energy storage into the grid will become more and more necessary, as these energy technologies will at times be producing more than is necessary (energy that will need to be store), and sometimes producing less than is expected (at which point energy storage can step in to fill the gap).

“Developing and deploying energy storage opens the door to adding more renewable power to the grid, which is essential to the fight against climate change,” Wyden said. “Energy storage will also help lower consumer costs by saving low-cost power for peak times and making renewable energy available when it’s needed the most, not just when the wind is blowing or the sun is shining. I’m looking forward to working with Secretary Moniz to find ways to implement the DOE’s recommendations to make energy storage an integral part of our country’s electricity grid.”

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SAIL CAPITAL PARTNERS

SAIL Capital Partners (www.sailcapital.com) is a leading cleantech investment firm with a global vision of technologies, markets and opportunities. We invest in cleantech companies with proven technologies, visionary leadership, measurable impact and exciting growth potential. We have invested in a number of today’s leading cleantech companies including Xtreme Power, Ice Energy, The Cleantech Group, Enerpulse, SNTech, Flex Power, Paragon Airheater Technologies, M2 Renewables, Clean Technology Solutions, CNS Response and WaterHealth International. SAIL has offices in California, Toronto, New Orleans and Washington D.C. as well as a global network of investors and advisors.

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SOURCES

- World Economic Forum
- ROTH Capital Partners
- PV Tech
- Greentech Media
- Orange County Register
- Cleantechonica