Santa Fe firm's patents among surge in green energy ideas

Posted: Saturday, October 19, 2013 6:30 pm | *Updated: 7:00 pm, Sat Oct 19, 2013.*

By Staci Matlock
The New Mexican | 0 comments

A solar heating unit that cools itself as needed is the latest patent granted to the company SolarLogic in Santa Fe.

Bristol Stickney, who works at SolarLogic, said it is one of six patents the company has attained in the last five years, including one for the design of solar heating systems that use the sun and fluids in tubes to warm a home or water.

The company's patents reflect a recent trend in energy development, with a sharp increase in renewable energy patents surpassing those sought in the oil and gas industry, according to a team of Santa Fe Institute researchers. Innovations in energy technology are increasingly important in light of concerns over climate change and energy security, the team said in an abstract of its report.

SolarLogic is one of several New Mexico companies or individuals that, combined, were granted 130 patents on solar ideas and another 18 for wind energy inventions since 1976, most in the last decade. By contrast, seven petroleum patents, 22 natural gas patents and one hydraulic fracturing patent were issued to inventors in New Mexico, according to a search of the U.S. Patent Office database. One of the natural gas patents is a portable leak detector designed by Southwest Sciences, based in Santa Fe.

Expanded markets coupled with public research and development investments have spurred rapid innovations in renewable energy, according to the Santa Fe Institute team's research.

The team — Luis M.A. Bettencourt, Jessika E. Trancik and Jasleen Kaur — spent a couple of years scouring computerized patent databases worldwide. They found 73,000 patents related to energy production and issued between 1970 and 2009. Of those, the number of solar and wind patents grew the fastest, outpacing fossil fuel and nuclear patents since the late 1990s.

"A patent is a curious thing," Bettencourt said. "In one sense it gives the inventor a partial monopoly. It is a disclosure, but also a partial claim on the technology."

The surge in renewable energy patents happened despite the fact that more public subsidies went to nuclear and fossil fuel research and development. The lack of public subsidies can hurt the speed of development early in a product's life cycle and make it harder to open markets that eventually make a product better and cheaper, according to Bettencourt.

China, now the world's largest energy consumer based on sheer size, surpassed all other countries in the number of energy patents filed in Europe. China also filed the most patents related to coal-power technology.

The team found that public money didn't translate into patents if there was no growing market. "Almost every nation has poured a lot of money into nuclear fusion research," Bettencourt said. "And that has actually led to very little innovation."

The team broke down the life cycle of innovation and technology into three phases. The early phase often involves public investment in research and development. If the technology is good and the public likes it, a market develops. As the market grows large enough, the technology becomes self-sustaining and needs little or no public subsidies.

But lack of public subsidies at the wrong time slows innovation, even if it doesn't kill it. The solar industry is a prime example. In the 1970s, during the oil embargo, when Americans had a first taste of life without fossil fuels, there was a government push to expand renewable energy. Inventors enjoyed a lot of incentives. When the crisis ended in the 1980s and cheap oil was back on the market, incentives for solar died.

"People who kept doing solar in the late 1980s and early 1990s were on their own," Stickney said. "The market remained very small."

Still, solar inventors kept inventing. Stickney knows people who have been in the renewable energy industry for decades, who prefer market-driven growth and less government subsidies. "What I've seen is when you add some reasonable, intelligent subsidies that reward good behavior, the hardware and technology spreads a lot faster," Stickney said.

Recent incentives — including tax credits for rooftop solar and a mandate for utilities to tap into a specified amount of renewable energy for customers — is once again building a market. For solar photovoltaic, development of cheap panels manufactured in China has helped drive the price down to the point that it is compatible with more traditional coal-fired and natural gas energy.

New patents can become new technologies and new products, and companies can launch new jobs in manufacturing, marketing, distribution and sales. Those products get better over time, with knowledge breeding new knowledge, Bettencourt said. So the original Apple computer decades ago was a major innovation at the time and helped lead to the portable tablets and smart phones available around the world today.

Stickney said a new fast-track program for energy-related patents launched by the U.S. Patent Office in the last six years also might have increased the number of patents issued recently. "All six of our patents were fast-tracked," Stickney said. "Usually it takes four years or more to get patents. It took ours only two years. That helped us a lot."

SolarLogic focuses on the development of solar heating systems for homes and businesses, a very different process than solar photovoltaic electricity. "Once you have a patent, your business

is protected to the point that you can finance your invention, perfect the product and manufacture it," Stickney added. "Other companies can't just copy you. It gets the invention out into the world that much quicker and spreads the technology that much faster."

Bettencourt said based on the team's research, both public money and public policies to open markets appears to be crucial for advancing energy technologies.

Contact Staci Matlock at   505-986-3055 or smatlock@sfnewmexican.com. Follow her on Twitter @stacimatlock.