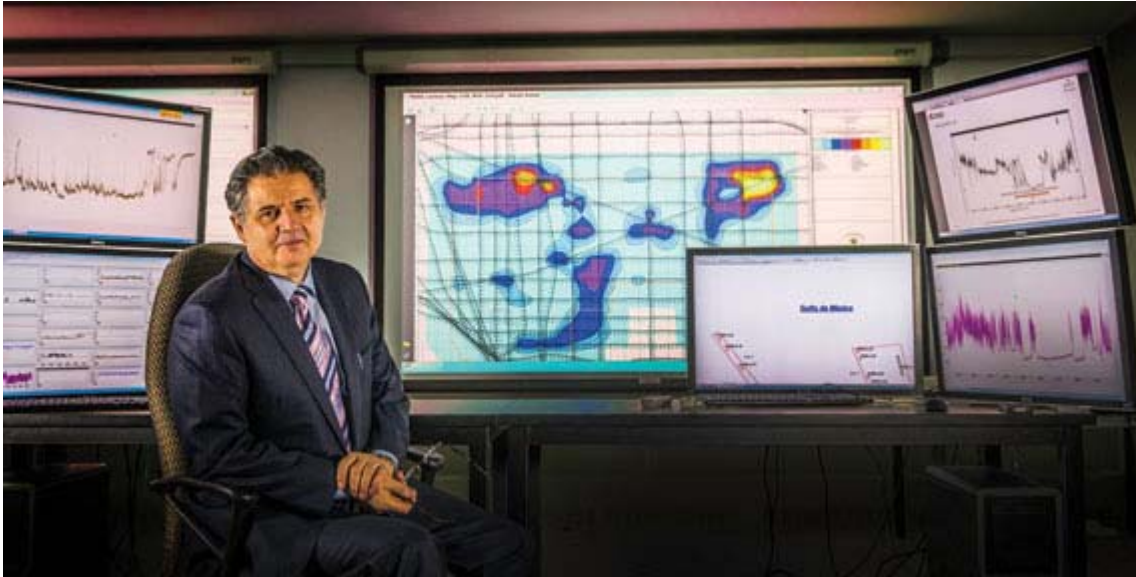


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NXT Energy Solutions spies oil elephants from the air

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George Liszicasz is hunting five- to 30-billion-barrel oil fields with NXT Energy Solutions
Photograph Bookstrucker

George Liszicasz created stress field detection (SFD) by accident. The inventor was developing a material that would convert heat to electricity, so pacemaker batteries would not have to be replaced. There was some distortion that Liszicasz didn't understand at first, but it eventually led to the creation of SFD. He says the technology detects subsurface stress caused by tectonic shifts from oil and gas reservoirs.

A couple of decades later and SFD is the pulse of Liszicasz's aerial survey company NXT Energy Solutions Inc. It's also the cornerstone of a \$5.8-million contract Liszicasz secured from Pemex in September 2012. A preliminary report from the data collected by NXT's survey was delivered to Mexico's national oil company three months later.

"We are waiting right now for confirmation that we can detect trapped reservoirs in salt," Liszicasz says. "If Pemex will confirm that for us, it will open up a brand new avenue for NXT. It means we are looking for elephants, five- to 30-billion-barrel fields."

Liszicasz founded NXT Energy in 1997, five years after accidentally inventing SFD. The company raised \$50 million during the next nine years as Liszicasz fine-tuned his invention. "The sensors are minute; they're as big as the nail on your little finger," Liszicasz says. "This is the first time quantum physics has been used in detecting subtle variations in the gravitational field."

The Calgary-based company launched its aerial oil and gas exploration service in 2006. Twenty-two sensors are enclosed in a box, which is connected to a system that digitizes the data. The SFD equipment replaces two seats in a Cessna Citation aircraft. Liszicasz estimates it costs between \$450,000 and \$500,000 to outfit an airplane with the company's sensors. NXT currently has access to three planes that are chartered out of Calgary.

The public company covers about 7,500 square kilometers during a flight. The plane flies in a grid system at an elevation of 3,000 meters, which allows exploration surveys to be conducted

in difficult-to-access areas. "The environmental issues are resolved because we have virtually no footprint," Liszicasz says.

Liszicasz says the company's proprietary SFD technology can detect trapped reservoirs offshore and onshore, including terrain such as jungles, deserts, foothills and mountains. He says the exploration survey run by the company is not meant to replace seismic. The SFD survey, rather, is designed to identify the presence of a trapped reservoir and allow producers to focus seismic activity.

"At stage one of the exploration cycle, you can tell if this basin contains trapped reservoirs," Liszicasz says. "And you didn't spend years and hundreds of millions of dollars using seismic to find if there are any traps."

NXT has conducted surveys close to home in B.C.'s Horn River basin, but its main focus so far has been South America. The company performed four surveys over the course of three years for Pacific Rubiales Energy Corp., as well as surveys in Argentina and Guatemala. The onshore and offshore survey for Pemex helped the company reach its 2012 target revenue of \$11 million.



The company has set a revenue target of \$40 million for the 2014 target. The company currently has 40,000 kilometers of survey data in Colombia. As NXT secures more contracts, it plans to build a library of proprietary data, similar to seismic companies.

Toronto-based investment firm Mackie Research Capital Corp. initiated coverage on NXT in September 2012 when the company's share price on the TSX Venture Exchange was \$0.91. Mackie settled on a 12-month target price for NXT of \$1.50 per share, which is below the company's December 2007 share price of \$4.94, but above the current 52-week high of \$1.17.

The report issued by the investment firm when it initiated coverage did note that one risk with NXT is that the SFD technology could not be verified. NXT is currently in the process of patenting the technology. Regardless, Mackie expects NXT to generate revenues of \$42 million in 2015.

In order to meet those expectations, NXT plans to expand its operations to several oil and gas basins around the globe. As well as South America, the company has a survey contract in Asia, and Liszicasz sees opportunity in Alaska, the Arctic and along the eastern seaboard of the United States. "As long as NXT performs and delivers the results for the client, that allows them to execute the next step in their exploration program and reduce their cost, risk, time and environmental footprint," he says.

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