



News release

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Protective coating for production components fills serious need for U.S. oil wells

BAY AREA HOUSTON, TEXAS – A veteran metallurgical engineer in the oil and gas industry, Anthony Rallis, was too familiar with the damage that corrosion causes to downhole oil well components. Determined to find a better way to protect those components, Rallis drew upon his expertise, as well as assistance from the Space Alliance Technology Outreach Program (SATOP), to create a new corrosion-resistant coating.

SATOP is administered by the Bay Area Houston Economic Partnership and is made possible through a consortium of Space Alliance Partners, which includes NASA Johnson Space Center, aerospace companies, and colleges that donate up to 16,000 engineering hours annually. Through SATOP, free engineering assistance is provided to small businesses with technical challenges.

Rallis, who has worked in the Permian Basin for many years, realized that there was a serious need for corrosion damage control for the more than 500,000 oil wells in the United States. “Corrosion is a huge problem in the oil industry,” he said. “Current coatings, such as plastic, are only good to a certain temperature and abrade very easily allowing for corrosion attack.”

Rallis founded his Dallas-based company, Aliron Tool Research (www.alirontool.com), to create a coating process utilizing ceramic-like materials he believed would effectively resist downhole corrosion. The coating had to also deter embrittlement, a type of deterioration that can be linked to stress corrosion, sulfide stress, and hydrogen cracking leading to catastrophic brittle failures.

He realized he needed metallurgical analyses conducted on the coating to validate its corrosion resistance performance. Rallis contacted SATOP for help and spoke with Bob Payne, who was a project engineer at that time. Payne, now SATOP’s program director, put Rallis in touch with the New Mexico Institute of Mining and Technology (NMIMT), a SATOP Alliance Partner.

NMIMT was provided with samples of downhole tools that had been coated with Rallis’ process and then tested in wells in Snyder and Penwell, Texas. Also conducted was a metallurgical and corrosion testing program, using the NACE TM 01-77 requirements. The tests conducted by NMIMT substantiated the effectiveness of the Rallis’ coating, called Aliron Coating, in resisting hydrogen sulfide and carbon dioxide corrosion, as well as hydrogen embrittlement. The coating also exhibited the ability to resist very high temperatures, chipping and impact during handling and transportation.

Rallis continued development of his process and applied for and received a patent. Aliron Tool Research is now manufacturing high strength couplings and collars and is planning to internally coat tubing and casing.

“Anthony’s new coating process is very exciting when you consider the cost of corrosion to the oil industry,” said Payne. “Right now, all the components in the well have to be replaced every few years; so, reducing corrosion of downhole oil well tools would save the industry a great deal of money.”

Rallis is moving forward with development of Aliron Coating and is preparing for second phase testing with internally coated tubing. He praises the staff at SATOP and the assistance in moving his efforts forward. “It was amazing to find out that this resource was available to me right in my own back yard,” he said.

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The Bay Area Houston Economic Partnership is a member-driven organization that provides the leadership to stimulate regional economic development and employment in southeast Texas. Its members include more than 260 investor companies, business professionals, local governments, and educational institutions encompassing 13 cities, Galveston and Harris counties, and the Port of Houston Authority. Visit www.bayareahouston.com.

Space Alliance Technology Outreach Program is administered by the Bay Area Houston Economic Partnership. It is a State of Texas funded initiative designed to transfer the knowledge and technology of the U.S. Space Program to small businesses to solve technical challenges they are unable to solve themselves. Visit www.spacetechnologies.com/bahep.