

Scientist Optimistic on Space Experiments

Monday, April 19, 2004 - 02:56:00 PM
By LINDA A. JOHNSON

When millionaire scientist Gregory Olsen turns space tourist months from now, he won't just be enjoying the view from the International Space Station 250 miles up.

Olsen, who is paying \$20 million to become the third person to ride Russia's Soyuz spacecraft into orbit, plans to bring along infrared cameras made by his company, West Windsor-based Sensors Unlimited Inc., to study the Earth and outer space.

Besides looking forward to the thrill of space travel, Olsen said he hopes his experiments will help scientists studying distant stars, chemical reactions such as ozone formation in the atmosphere, and the health of agricultural crops. He also wants to excite young people about science and plans video hookups with students at schools in Trenton, his native Brooklyn, N.Y., and on the Crow Indian Reservation in Montana.

"I want to reach out to the areas that don't normally get this stuff," said Olsen, who grew up in Ridgefield Park and holds a master's degree in physics from Fairleigh Dickinson University and a Ph.D. in materials science from the University of Virginia.

He concedes yet another motive.

"This is one of the best things I can do now for the company," Olsen, 58, told The Associated Press in a recent telephone interview from Russia, where he is completing "astronaut" training.

Along with free publicity for Sensors Unlimited, which makes infrared imaging cameras and components for fiber optic communications systems, Olsen said his adventure will bring long-term benefits to the business, based in a modest industrial park outside Princeton.

Those benefits include proving the value of his infrared cameras in gathering data in space and possibly showing the infrared detectors inside could be made more efficiently in gravity-free space — assuming commercial space travel eventually becomes affordable.

Infrared video cameras can "see" without any visible light because they detect an adjacent portion of the light spectrum, infrared.

Sensors Unlimited's high-resolution cameras detect various segments of the infrared lightband through complex sensors inside. The sensors, a sandwich of integrated circuits with hundreds of thousands of microscopic wires made from alloys of the metals indium, gallium and arsenic, take about a month to make, all inside dust-free "clean

rooms." Each is tailored to the customer's needs.

"There's only a few companies in the world that can do it, but we do it exceptionally well," said company president and co-founder Marshall J. Cohen.

The cameras generally cost about \$20,000. They have more than 100 applications in industry and the military, from surveillance and medical imaging to food processing, spectroscopy and quality control in manufacturing, according to Cohen.

Many Sensors Unlimited customers call its infrared cameras top-notch.

"We see them as one of the leaders, if not the leader, in a very important technology to our defense programs," said Jeffrey Paul, manager of a Defense Advanced Research Projects Agency effort to develop a next-generation night vision system for the helmets of U.S. military personnel.

It would allow them to see more clearly in pitch black and instantly transmit via special radios what they see to others nearby and to headquarters. That would give U.S. troops a huge advantage over enemies using commercial night vision goggles, which require some visible light.

Paul said Sensors Unlimited is building high-performance infrared sensors, to be delivered next month, that likely will be part of the system.

Monsanto Corp. has been using Sensors' cameras for five years in its high-tech system to measure concentrations of protein, oil and starch inside seeds — information needed to screen thousands of seed samples per day to find the ideal ones for crossbreeding plants to produce better crops.

"We couldn't do it without their camera," said Monsanto research specialist Steven Modiano. "It's indispensable."

Dr. Gary Tearney, a researcher at the Wellman Center for Photomedicine at Harvard Medical School, recently began using Sensors' infrared detectors as part of a system being developed to help predict whether plaques inside heart arteries are likely to trigger a heart attack. The system includes a catheter threaded into the heart with a tiny camera on the tip that transmits images back to a computer console that includes an infrared detector.

"It allows us to do much higher-sensitivity imaging at higher speeds," Tearney said.

Sensors Unlimited's infrared detectors, thermal imaging systems and equipment to amplify the tiniest bid of visible light appear to be top-quality, and the company is unusual in manufacturing everything it develops, said Stephanie Henkel, executive editor of Sensors magazine. She said competitors include Raytek of Santa Cruz, Calif., and Redlake of San Diego.



Gregory Olsen

Olsen and Cohen founded Sensors Unlimited in 1992, then sold it for \$700 million in 2000 just before the telecommunications industry tanked. The new owners slashed jobs and were about to shut the facility when Olsen, Cohen and other remaining managers bought it back for \$6 million in 2002. After struggling for the next several months, they turned things around.

"We've been profitable ever since," and had revenues of about \$15 million last year, said Cohen.

While Olsen remains chief executive officer, he's temporarily letting Cohen and other managers run things.

Olsen has been pronounced fit for his space trip and has just begun six months of physical, science and Russian-language training in Star City, Russia, in mock-ups of the Soyuz and International Space Station at the Yuri Gagarin Cosmonaut Training Center.

His progress during the training, which includes spinning inside a centrifuge to simulate the intense gravity forces of liftoff and descent, is being tracked on a Web site, <http://www.gotoorbit.com>. It's run by Space Adventures Ltd., the Arlington, Va. company that brokers space tourist trips with the cash-strapped Russian space program.

Olsen is slated to fly to the space station in April 2005 but is hoping to get bumped up to the next flight, in October.

"Just the experience of orbiting the Earth ... it was beyond my imagination but it's something that's fascinated me all my life," he said.


SENSORS
UNLIMITED, INC.
www.sensorinc.com