



An F/A-18E Super Hornet from the Royal Maces of Strike Fighter Squadron (VFA) 27 makes an arrested landing on the flight deck of the Nimitz-class aircraft carrier USS George Washington (CVN 73). Luna Innovations' patent-pending technology can be applied to an aircraft canopy to improve visibility during takeoffs and landings.

# LUNA INNOVATIONS, INC.

Landing a jet fighter on an aircraft carrier is often cited as one of the most perilous maneuvers Naval and Marine Corps pilots will ever have to perform. Throw in unpredictable weather conditions, like wind and rain, that often cloud the windshield and reduce visibility, and now the task is even more arduous. The U.S. Navy sought a solution by releasing a Small Business Innovation Research (SBIR) solicitation to develop a durable rain repellent coating for aircraft that would increase visibility during takeoff and landing.

## PHASE III SUCCESS

\$21.3 million in revenue for 2014; recently sold technology to Intuitive Surgical in deal valued up to \$30 million

## AGENCIES

DOD

## SNAPSHOT

Roanoke-based Luna Innovations develops and commercializes innovative technologies in process & quality control, test & measurement, asset protection & monitoring, and fiber optic sensing; employs 200 people across six offices.

## LUNA INNOVATIONS, INC.

301 1st Street, SW,  
Suite 200  
Roanoke, VA 24011

[www.lunainc.com](http://www.lunainc.com)  
(540) 769-8400

Virginia-based Luna Innovations won the SBIR award and went on to develop a proven solution that could work on any type of hard surface. A Phase II project soon followed, and it wasn't long before the Air Force signed on to partner with Luna on an F-16 canopy application.

"We looked at the potential for the technology, and knew it was something the military needed, but the possibilities were also very broad commercially," explains Luna Innovations CEO My E. Chung. "We have leveraged multiple SBIR awards to develop and advance this technology, and that was one of the keys to our success."

Recognizing the need to find the right partner to bring the technology to market, Luna licensed the durable surface transparent coating to UltraTech International for multiple commercial applications under the tradename Gentoo™ coatings. Licensing is a key revenue generator for the company, bringing in \$9.1 million in 2014; a 31% increase from the previous year.

A potential application Luna is exploring for its related omni-phobic (water and oil repellent) textile coating technology, licensed to UltraTech under the EverShield™ name, is in the area of Army uniforms. The Department of Defense is exploring options for use in the battlefield to keep water, oil and other fluids off the soldiers' uniforms. This textile application could have broad commercial potential, especially within the multi-billion dollar U.S. laundry industry.

Although Luna creates and develops a broad range of technologies across multiple platforms including sensors, materials, and health sciences, it has built its reputation by being the preeminent developer and manufacturer of fiber optic solutions to clients within

the telecommunications, medical, energy, aerospace, automotive, defense and composites industries. In the fiber optic arena, Luna provides diagnostic and test instrumentation for the telecommunications industry, enabling complete characterization of optical components, assemblies and short-haul networks. The company's solutions provide cost and time savings in development, production and maintenance of next-generation optical equipment. Drawing from this core competency, Luna developed a patented process to track the shape of the fiber. This process ended up having huge commercial potential in the robotic surgical industry, since the tip of the fiber could communicate to the doctor exactly where that instrument was within a patient, say for example at the end of a catheter. It eliminates the need for patients to be hooked up to X-rays and MRIs during surgical procedures, creating an unparalleled value proposition to both the doctor and the patient. In 2014 Luna sold its medical shape-sensing technology to Intuitive Surgical in a deal valued up to \$30 million.

"That's really the value of our team; we look at the market perspective," explains James Garrett, Vice President of Technology Development for Luna Innovations. "We have built a very strong research institution, and have refined our focus and recently have added marketing capabilities to our technology development division. That was a major shift in how we approach things – how are we going to take these efforts and commercialize them? That question is shaping the whole strategy of our division."

Another part of that strategy centered on a recent merger with Advanced Photonix, Inc. (API), to better position Luna for improved profitability. The combined company, which retained the Luna name, has significant intellectual property protection for the many technologies in its combined product portfolio, with over 200 patents and patent applications. With a shared vision, the decision to merge was a relatively simple one, as the merged company can now offer a more comprehensive and therefore a more compelling value proposition to the industries it serves. Luna is looking forward to a bright and successful future.

"The merger with API gives us a real kick start with a solid vision in terms of continually expanding and marketing our core technologies," added Chung.

Led by Garrett, the technology division is honing in on commercial applications and opportunities that help the company to guide its selections in the SBIR sector. One of those selections continues to draw upon Luna's coating technologies for a recent SBIR Phase II project with the Navy. The fleet's cable strands used to tow the AQS-20A Minehunting Sonar System from the ship are made from a type of stainless steel that, under normal circumstances, exhibits excellent corrosion resistance and strength over a wide temperature range. However, the cables are experiencing early life corrosion problems due to salt water deposit buildup that occurs over repeated operations and subsequent system stowage. To achieve the corrosion and abrasion resistance necessary for the AQS-20A tow cable, Luna is collaborating with Lockheed Martin to develop a hydrophobic water shedding coating that is mechanically durable, optically transparent, and easy to apply.

And while revenue stemming from research and development accounts for 30% of Luna's revenue, the team understands the importance of bringing a product to market.

"If you look at some of the largest research entities in the country over history, those companies are a shell of what they used to be because it is extremely expensive to perform just research; you have to learn to commercialize," explains Chung. "That is why the SBIR program is critical. The government has stepped in and provided funding for pure research. It allows us to afford a research team. We will continue to leverage that; it is great source of future products and technologies."

In summary, Luna Innovations provides unique capabilities and instrumentation for the telecommunications industry and for distributed fiber optic sensing. Luna's products divisions currently account for the majority of their revenue, but the technology division is leveraging the SBIR program to build and maintain a strong portfolio of diverse research and development to help drive the next phase of company growth.

