



Luna's Fiber Optic Sensing Used in Railway Test in France

May 7, 2009

BLACKSBURG, VA, May 7, 2009 - Luna Technologies' fiber optic sensing system, the [Optical Backscatter Reflectometer \(OBR™\) 4400](#) device with distributed Rayleigh sensing, was used in an experiment by the French Public Works Research Laboratory in conjunction with the French National Railway for the possible use as a cavity detection or sink hole warning system on railway track beds and tunnels. Embedded cavities, or sink holes that may induce soil collapse present a major risk to the French railway system. Current technologies such as ground penetrating radar, seismic analysis or infrared thermography are increasing in use to locate cavities, but do not offer continuous embedded cavity monitoring, a major concern for rail companies and a key benefit of Luna's solution.

The experiment conducted a full-scale laboratory investigation of Luna's OBR, which uses optical frequency-domain reflectometry, together with a competing technology that uses Brillouin scattering. The instruments were tested for spatial and strain sensitivity, parameters that are key in determining the size and location of cavities or sink holes. The technologies were benchmarked against a Finite Element Analysis (FEA) model to check for device accuracy and sensitivity. The study concluded that Luna's OBR was the better option for use in a cavity detection system due to its superior performance. The OBR technique was more viable due to higher spatial and strain resolution, resulting in better detection and size determination of the embedded cavities. In the test, the OBR identified a 5 mm embedded cavity located 2 meters away from the sensing cable.

These findings were published in [Measurement Science and Technology](#) in an article titled "Soil-embedded optical fiber sensing cable interrogated by Brillouin optical time-domain reflectometry (B-OTDR) and optical frequency-domain reflectometry (OFDR) for embedded cavity detection and sinkhole warning system." *Measurement Science and Technology* is an international journal published by the Institute of Physics that is devoted to the theory, practice and application of measurement in physics, chemistry, engineering and the environmental and life sciences from inception to commercial exploitation. To access the article, visit <http://is.gd/u90z>.

Luna's OBR 4400 is the industry's only ultra high-resolution OTDR with backscatter-level sensitivity designed for component- and module-level reflectometry. The instrument has a small, easily transportable platform and can measure reflections over lengths up to 2 kilometers with no dead zone and sub millimeter resolution. The integrated temperature and strain sensing capability makes the OBR4400 the industry's highest resolution distributed sensing system. For more information, visit www.lunatechnologies.com.

About Luna Technologies:

[Luna Technologies](#), a division of Luna Innovations Incorporated (NASDAQ: LUNA) located in Blacksburg, Virginia, manufactures and markets test and measurement equipment and integrated sensing solutions. Luna Technologies' products are used for process and control monitoring in telecommunications, manufacturing, power generation and distribution, down-hole oil and gas production, aerospace, and defense applications. Its products have won numerous awards and are sold and distributed throughout North America, Europe, the Middle East and Asia.

Forward Looking Statements: This release includes information that constitutes "forward-looking statements" made pursuant to the safe harbor provision of the Private Securities Litigation Reform Act of 1995, including statements regarding the benefits and performance of our fiber optic sensing system as a cavity detection system. Statements that describe the Company's business strategy, goals, prospects, opportunities, outlook, plans or intentions are also forward looking statements. Actual results may differ materially from the expectations expressed in such forward-looking statements as a result of various factors, including technical difficulties with the use of our fiber optic sensing system in actual practice as a cavity detection system and risks and uncertainties set forth in the company's periodic reports and other filings with the Securities and Exchange Commission. Such filings are available at the SEC's website at <http://www.sec.gov>, and at the company's website at <http://www.lunainnovations.com>. The statements made in this release are based on information available to the company as of the date of this release and Luna Innovations undertakes no obligation to update any of the forward-looking statements after the date of this release.

Media Contact Information

Name: Karin Clark

Title: Vice President, Marketing and Communications

E-mail: <mailto:kclark@lunainnovations.com?subject=PR%C2%A04400%C2%A0Inquiry>

Phone: 1.540.769.8400