

Symposium Speaker

Full Name	Sanghoon Chin
Affiliation	OMNISENS
Presentation Title	Field deployment and applications of distributed optical fiber sensing

Biography

Dr. Sanghoon Chin received, in 2009, the Ph.D degree from the electrical engineering department at Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. His research was oriented to progress the dynamic control on the light speed, using Brillouin scattering in optical fibers. After then, as scientific researcher at EPFL he implemented Brillouin slow light device for RF signal processing in microwave photonics domain, in order to develop dynamic tunable microwave filters and true time delay lines for broadband RF signals. Then, he joined in 2011 OMNISENS SA in Switzerland. He develops the distributed optical fiber sensing systems to monitor the temperature, strain, pressure and third party intrusion for the energy industry such as oil&gas pipelines, onshore&offshore power cables and umbilicals. Also, he works on modeling on the thermodynamics, which results from pipeline leaks to validate the possibility of the subtle pipeline leak detection.

200 words abstract

Distributed optical fiber sensing (DOFS) systems have been extensively deployed to monitor the safety in energy industry such as Oil&Gas pipeline and electrical power cables for both onshore and offshore. In general, pipelines seek for distributed temperature sensing (DTS) to detect subtle pipeline leaks, for distributed strain sensing (DSS) to protect their pipeline from landslide, subsidence and seismic activity under geo-hazard conditions, and for distributed acoustic and/or vibration sensing (DAS or DVS) to monitor the third party intrusion. To date, the combination of Brillouin-based DTS/DSS and DAS/DVS can meet properly those requirements. On the other hand, power cables need usually temperature sensing to optimize the performance of power cable operation in terms of energy generation and transportation. Two broad types of DTS: Raman- and Brillouin-based sensing systems are mostly deployed in the real applications, but today the industry pushes the maximum sensing range to >100km.

This paper will review comprehensively Brillouin-based DTS and DSS development over the last 15 year from technology qualification and validation to its implementation in real cases as well as its successful continuous operation for both pipelines and power cables.