

WHAT IS DAS?

Distributed Acoustic Sensing (DAS) is a sensing technology that delivers real time spatially resolved acoustic and vibration output from virtually unlimited points along a fiber optic cable. The technology effectively turns common optical fiber (or specially optimized cables) into a series of thousands of sensitive virtual microphones or vibration sensing devices. DAS produces thousands of channels of acoustic output from these virtual microphones – in real time.

HOW DOES IT WORK?

The DAS unit sends a short pulse of laser light down an optical fiber where tiny changes of refractive index, frozen at the time of manufacture, cause a small amount of light to be returned towards the origin by Rayleigh backscatter or other controlled reflection techniques such as Fiber Bragg Gratings. The backscatter is modulated by any sound waves or vibration propagating through the glass – causing the pattern to change at that point. These changes can then be processed for vibrational content or simply listened to individually.

WHAT APPLICATIONS CAN DAS BE USED FOR?

DAS can be used on linear assets such as pipelines, roads, tracks, borders, or fences. Using specially developed algorithms it is possible to listen to, track, and detect various activities and events along such assets, including vehicle and human traffic, digging, or tunneling. It can also be used for asset condition monitoring by detecting events such as pipeline leaks or broken rails, and much more.

WHAT ARE THE BENEFITS OF DAS?

DAS is easy to install, requires little to no power in the field, covers ranges up to 45 km (30 miles) (double this for twin headed devices) and dramatically simplifies sensing systems when compared to traditional point-sensing methods. In many cases, it is possible to use available “dark” fibers alongside existing networks close to the asset to be monitored. New fiber optic cables can be deployed at relatively low cost, and unused fibers can be used for other purposes such as asset communications or rural broadband delivery.

WHO ARE THE FOSA DAS SUPPLIERS?

[AP Sensing](#), [FEBUS Optics](#), [Hifi](#), [LUNA](#), [NEC Corporation of America](#), [Network Integrity Systems](#), [SAMM Teknoloji](#), [Sensonic](#)

THE FIBER OPTIC SENSING ASSOCIATION (FOSA)

FOSA is a non-profit organization created in Washington DC in 2017 with the mission of educating industry, government, and the public on the benefits of fiber optic sensing. Through webinars, videos, white papers, public presentations and public policy advocacy, the organization provides information on the use of fiber optic sensing to secure critical facilities, enhance public safety and protect the environment.

FOSA Members include FOSA Members include ACI Monitoring, AP Sensing, AqualinQ, Berkeley (University of California), Corning, Ditch Witch, Dura-Line Corporation, Eastplace Consultants, Exail, FBGS, FEBUS Optics, Go!Foton, Graz University of Technology, Hifi, Luna Innovations (LIOS, OptaSense, Silixa), NEC Corporation of America, Network Integrity Systems, Nodeology, OFS, Optical Strategies LLC, OZ Optics, PROP Systems, Prysmian (EOSS, Omnisens), SAMM Teknoloji, Sensonic, Smartpipe Technologies, Underline, and VIAVI Solutions. For further information, please visit <https://fiberopticsensing.org>.