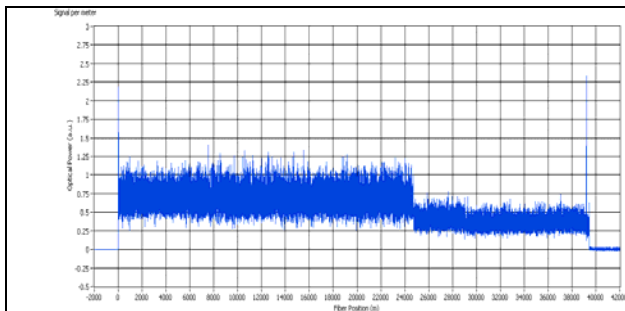


Fiber Network Distributed Acoustic Sensor (FINDAS).

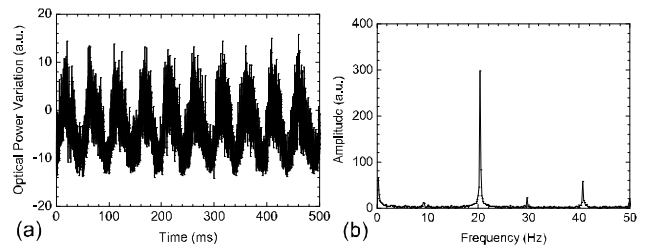
FINDAS is a powerful distributed acoustic sensor system capable of detecting acoustic events in the vicinity of critical infrastructure (e.g. pipelines, perimeters, etc). The system is based on coherent optical time-domain reflectometry (COTDR) technology. FINDAS can detect, identify the position and register the acoustic vibration produced by heavy machinery anywhere close to the fiber. The distance covered by the acoustic sensor is typically 35 km, with a resolution of 10 m optical and 1 m electrical sampling. The acoustic sampling rate is typically 1 kHz, thus allowing measurements of acoustic events up to 500 Hz. Although these are the standard performance values, FOCUS can accommodate different ranges, resolutions and acoustic sampling rates on demand, within the limits set by the COTDR technology (contact FOCUS for special requests).

Once a suspicious event is detected at a given position, the acoustic signal at this position is recorded. Further online or offline analysis can provide information on the type of acoustic event, and classify its origin.

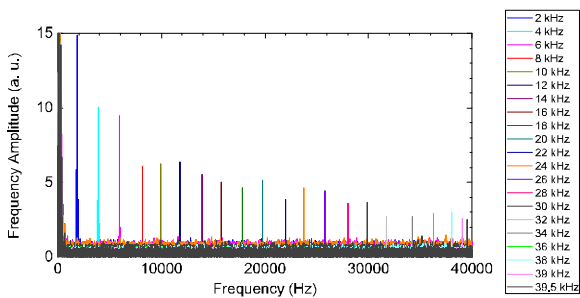
Distance calibration of the system is provided according to IEC 61746.



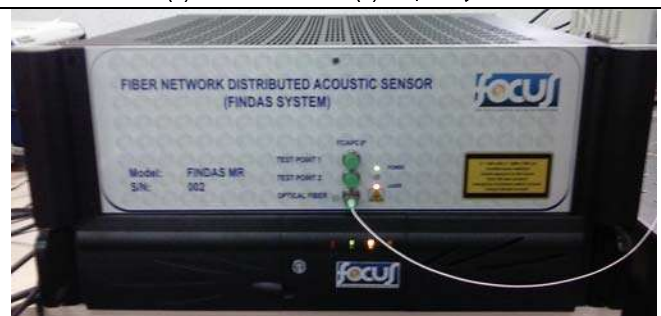
Sample trace acquired by the system showing high-visibility interference signal all along a 40 km fiber.



Visualization of a 20 Hz vibration applied in the far end of the 40 km test fiber (a) time-domain and (b) frequency domain



Spectral response under different applied frequencies for a 600 m test fiber. Vibration is applied in the far end of the fiber



FINDAS system photograph

Specifications

Optical/Electrical	
Wavelength	1550.12 nm
Distance range & Fiber type	Up to 45 km (G652 fiber). More distance can be accommodated using our proprietary Raman-assistance technology
Spatial resolution	10 m (others on demand)
Readout resolution	1 m (others on demand)
Mechanical & Interface	
Output optical connector	FC/APC other (SC/APC, etc) on demand, preferably APC technology
Power Supply	230 VAC; 50 Hz; max 300 W
Distance uncertainty	$U(L) = (5 + 1 \cdot 10^{-5} \cdot L) \text{ m}$
Working temperature	$(22 \pm 2) \text{ }^\circ\text{C}$
Humidity	(10 ~ 70) % RH
Dimensions	5U 19" rack-mount (48.2x70x22.2 cm WxDxH)
Weight	< 20 kg

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