



SYTMIS probe for the acoustic monitoring of abandoned cavities

The SYTMIS[®] 1DM probe is designed for the acoustic listening of disorders and instabilities in subsurface voids as abandoned underground quarries and mine openings, old tunnels and disused engineering structures or even natural cavities. The SYTMIS[®] 1DM probe measures all propagating sound and infrasound air pressure waves caused by all noisy events of various origins such as roof falls, spalling and breaking of superficial rocks, cracking of beds and buttresses, shallow fissuring in concrete, backfill and rock pile slides, or other unexpected events as human intrusion or sudden water flowing.



Highlights

Very low power

High dynamic range

Large-scale monitoring

Rugged construction

Easy installation and retrieval

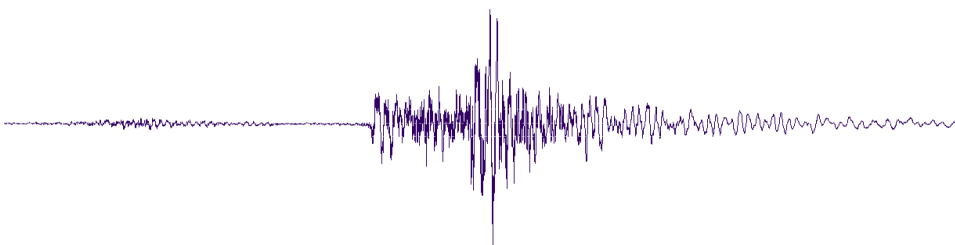
Field applications

**Abandoned underground
quarries and mines**

Old tunnels

**Disused subsurface
engineering structures**

Karsts and caves



INERIS

controlling risks
for sustainable development

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A limited number of probes connected to a SYTGEM[®] acquisition unit provides automatic detection, acquisition, recording and transmission of all transient acoustic data to a central site. Advanced processing allows localisation of the source even in extended room-and-pillar geometries. Acoustic monitoring is a cost effective alternative technology to visual inspections and geotechnical measurements based on anchored deformation and tilt sensors, especially in hazardous areas.



Built with high standard metrological characteristics, the probe has an easy-to-handle rugged housing for fast installation in large underground junctions or in naturally protecting recesses. It features easy recovery and removal along with minimal maintenance thanks to its long term stability and integrated autotest functionality.

Applications in inaccessible dry or flooded cavities are possible with installation of probes in thru-boreholes, using microphone or hydrophone type sensors.

Acoustic transducer	Brüel & Kjaer type 4188 microphone or 8106 hydrophone other sensors on request
SYTMIS amplifier:	40 dB \pm 1%
Sensitivity:	3 V/Pa Omnidirectional (\pm 1dB) for $f < 1$ kHz
Number of wires:	3 twisted pairs, overall and pair shielding
Dimensions - mass:	\approx 40mm/50mm/500mm / < 3kg
Enclosure:	High density molded cylindrical PVC casing Built-in female connector base Easy-to-connect male connector provided



SYTMIS[®], SYTGEO[®] and SYTGEM[®] are registered trademarks of INERIS. All specifications subject to change without notice.

For more information and custom applications, please contact us:

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maîtriser le risque
pour un développement durable