

Auscultation

[Investigation and Preliminary Observations](#)

[Non destructive Investigations](#)

[Destructive Techniques](#)

Small or large galleries, passenger tunnels, ticket halls, pumping stations, ventilation stations, motorway tunnels, etc. have all been built at different times and with different techniques and materials in varied geological horizons. They have been reshaped, modified, refurbished, reinforced, etc.

They need to be monitored in the framework of prevention operations. The major clients faced with the management of such properties have created specialised 'GERONTOLOGY' departments in charge of these 'ageing' underground facilities because accidents are less and less accepted and acceptable.

A diagnosis: the reason why



Several factors influence the evolution of underground facilities from their opening.

Basically, they are:

- age,
- material quality,
- construction method, and environment,

- characteristics of the traffic or fluids carried.

The relative importance of these factors varies very much. A 100-year old tunnel in quarry stoned masonry does not evolve like a recent tunnel in concrete formwork totally watertight. Establishing a diagnosis implies a good knowledge of the facility's evolutive elements, of invariable data as well as the utilisation of observations, fine sounding and appropriate analysis.