

## Hagerbach Test Gallery – an impressive success story

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The Hagerbach Test Gallery is a fascinating underground world. The facility comprises numerous tunnels, caverns, testing areas, laboratories and training rooms that offer ideal conditions for research work, test procedures and 1:1 trials.

The Hagerbach Test Gallery is located 100 km east from Zurich in the unique geotectonic arena Sardona (UNESCO world heritage). Founded in 1970 by the mining engineer Dr. Rudolf Amberg the facility was built up completely new with the clear scope to serve as a research and development facility for tunnel construction. Today the underground network expands on approx. 5.2 km length.

Initially, the focus was on testing drill and explosives technology: between 1974 and 1976, the blasting facility and blasting chamber were built, the firing gallery and the observation bunker were constructed thereafter, and a second access point was created to allow operation with circulating air. In the 1980s, a shooting range was constructed for the investigation of mechanical properties on artillery. The opening of the building materials test laboratory in 1984 was a significant change with respect to the services offered at VSH. The following years saw the construction of a concrete plant to assist with sprayed concrete and injection tests (1995) and the development of special education and training courses to expand our range of services with respect to tunnel safety. Recently activities focus more and more towards inspection, maintenance and renovation of various underground systems, including large diameter sewage channels to small pipe systems technology for infrastructural supply.

Nowadays, experts from all over the world appreciate this environment as a training ground and research laboratory. Private companies, research entities and public institutes lease parts of the gallery for own testing work or life demonstration purposes under real conditions.

By being involved with national, European and international research projects, Hagerbach Test Gallery can secure a broadly-supported foundation of knowledge for itself and its staff. Its independence and expertise is continuously under review and has been confirmed by accreditation from SAS since 1994.

For promotion of a better use of underground space and of its exploration technologies an interesting visitor programme, featuring tours and hosting third-party events is offered. With the own restaurant and various types of seminar and meeting rooms, the services of the Hagerbach Test Gallery as Event-Location is broadly enjoyed.

Each section of the gallery offers its own environment with respect to installation (pipes, wires, lamps, doors, security means), surface conditions (rough, sprayed concrete, membranes, cast concrete lining, concrete segment lining, concrete protection sealants and paints), profile (small to large), ground preparation (open, beton, small rails, high-speed railway sleepers with rails) or intended use (industrial installation, railway, cross-connecting gallery with electric installations, road tunnel, production cavern). In particular intended damages for testing and inspection purposes are identified and serve as known reference to new inspection means.

The presentation includes also an outlook on new activities like "Digitalization", "Alternative use of underground space" and potential topics for applied research on subsurface use.