

Earth Responsive



GD TEST S.r.l. a Torino based company, specializes in services in the areas of geotechnics, geomechanics and the environment in support of the design and construction of large geoengineering works. With a staff of geologists, engineers and computer scientists, GD TEST has continuously worked on sites in Italy and abroad since 1992.

Its main fields of activity are:

- Laboratory tests of soil, rocks, aggregates and water (the laboratory is authorized by the Ministry of Infrastructure and Transportation in accordance with circular 7618/STC for tests on soils, rocks and aggregates along with external tests)
- On site tests, geotechnical, geomechanical structural and environmental surveys and monitoring
- Geophysical, geochemical and hydrological surveys
- Informative Territorial Systems (GIS), development of application software for handling data obtained from the investigations, tests, measurements and surveys, analyses on territorial and environmental models.

GD TEST has adopted the standard of certified systems:

- Quality Management (EN ISO 9001:2015)
- Environmental Management (EN ISO 14001:2015)



Rock Laboratory

Soil Laboratory

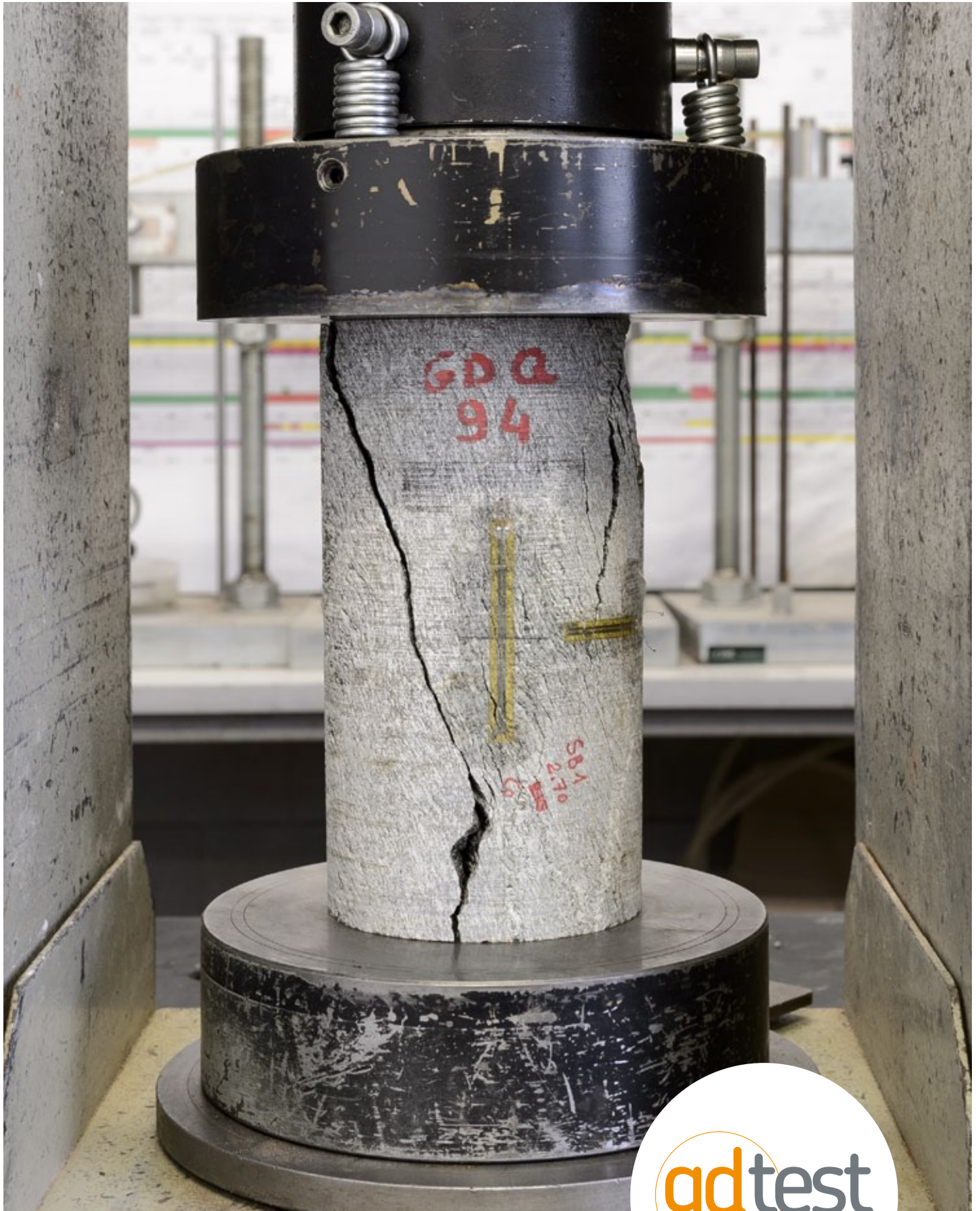
GIS Geographical Information Systems (SIT)

Monitoring

Geoengineering

In situ testing and surveys

Rock Laboratory



Rock Laboratory

The laboratory is authorized by the Ministry of Infrastructure and Transportation for the execution and certification of Tests on soil and rocks (A & B sectors), aggregates and external tests in compliance with circular n. 7618/STC 2010 ART.59 D.P.R. 380/01



Physical-chemical and petrographical characterization

- Unit weight, water content, porosity, imbibition coefficient, water depth penetration, carbonate content, petrographic and modal analysis, rock quality index, equivalent quartz content, diffractometric analysis

Geomechanical characterization

- Uniaxial and triaxial compression and determination of deformability and intrinsic strength parameters of the rock
- Indirect tensile strength "Brazilian" test
- Creep tests
- Elastic P and S wave velocity measurement in free and weight-bearing conditions
- Direct shear test and determination of parameters " c " e " ϕ "
- Slake Durability Test
- Geomechanical indices
- Tilt Test
- Point Load Test
- Determination of swelling indices and swelling pressure



Characterization of mechanised excavation

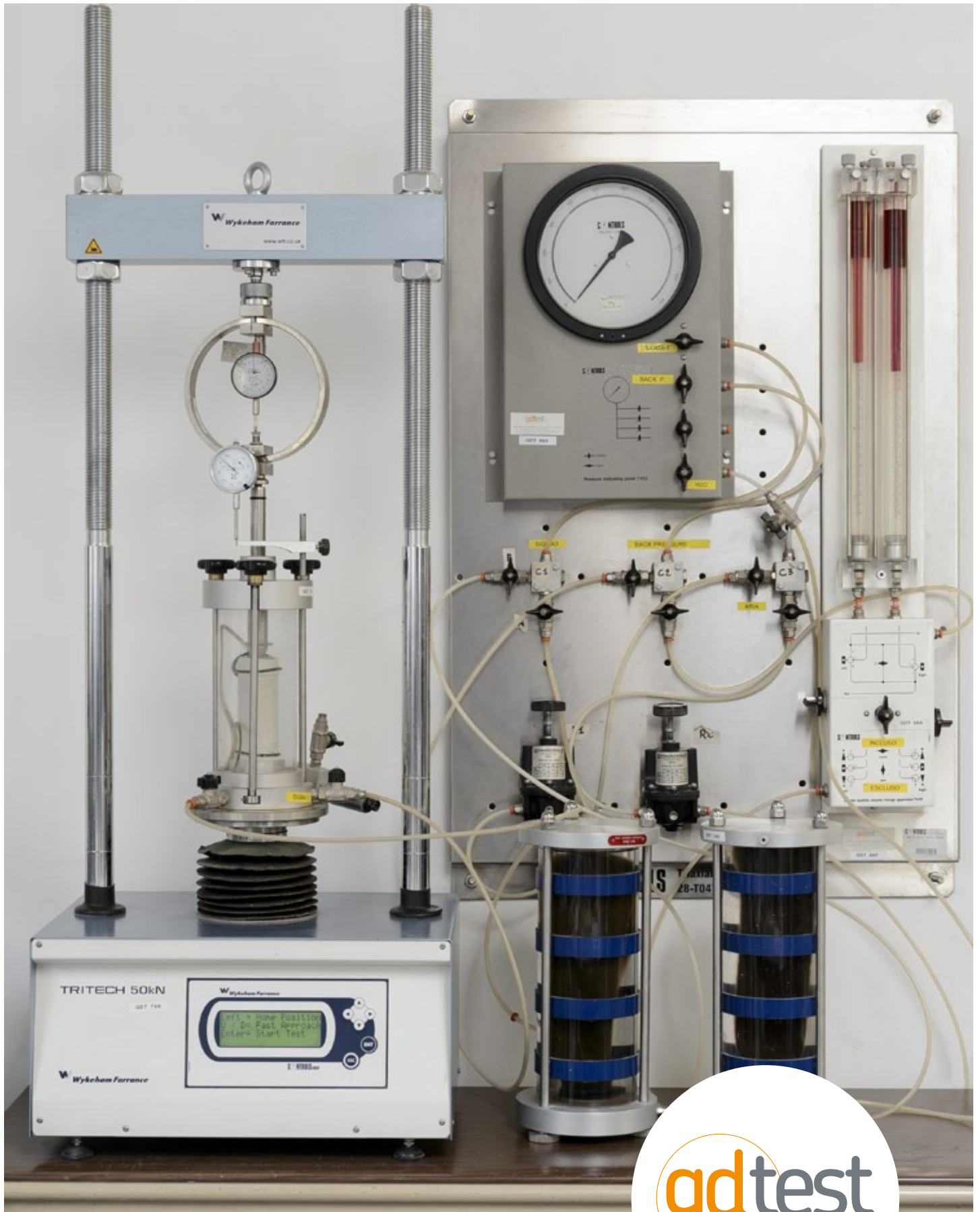
- CERCHAR hardness and abrasion tests
- LCPC abrasion index
- Cone indenter hardness
- Punch penetration test
- Perforability test (Sievers' Test)
- Impact tests (Brittleness Test)
- DRI and CLI indices

Tests for natural construction stones in compliance with CE standards

- Petrographic description
- Bending resistance
- Compression resistance
- Unit weight and porosity
- Frost resistance
- Abrasion resistance
- Slip resistance
- Water absorption



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Determination of physical properties

- Particle size analysis for sieving and sedimentation (aerometry)
- Atterberg and shrinkage limits
- Natural unit weight
- Water content
- Specific weight of particles
- Sand equivalent test
- Aggregate shape and flattening indices
- Alkali reaction test
- Carbonate, sulfide, chloride, organic substance content
- Inert waste disposal test for eventual removal or reuse

Characteristics of lime treated soils

- Characterization of natural untreated soil
- Incremental lime mixing treatment and subsequent performance analysis

Performance characteristics of recycled aggregates

- Conformity of recycled aggregates with C annexes of circular n. 5205 dated 15/7/2005



Mechanical property characterization

- Consolidation oedometer tests
- Swelling pressure and index
- Uniaxial compression strength test
- Triaxial compression strength (UU, CU, CD)
- Direct shear test (CD)
- Direct permeability in triaxial and oedometer cells
- AASHTO compaction standard and Proctor compaction test
- CBR and IPT indices
- Los Angeles abrasion test



Geoengineering



Geoengineering

Studies, consulting and design in the geotechnical and geological field



Geological technical studies

- Geological, geomorphological and hydrogeological surveys and data reporting on digital maps
- Geostructural surveys and analysis of rocky outcrop
- Analysis and processing for the geotechnical and geomechanical characterization of soil and rocks
- Stability analysis of natural slopes and excavation faces



Design

- Investigation and monitoring plans during design and construction phases
- Preliminary and detailed design of underground works (tunnels, caverns, wells and foundations)
- Preliminary and detailed design of safety measures and stabilisation of slopes and excavation
- Analysis and identification of excavation methods for underground works, dimensioning of the TBM and establishing of advancement procedures (PAT)
- Analysis and identification of optimal design solutions in technical-economic terms with respect to tunnel construction bids



Applied Research

- Analysis and industrial research on innovative systems in the geoengineering field
- Design and dimensioning of prototypes
- Pre-competitive development of innovative systems and applications
- Experimentation and testing

Assistance during construction

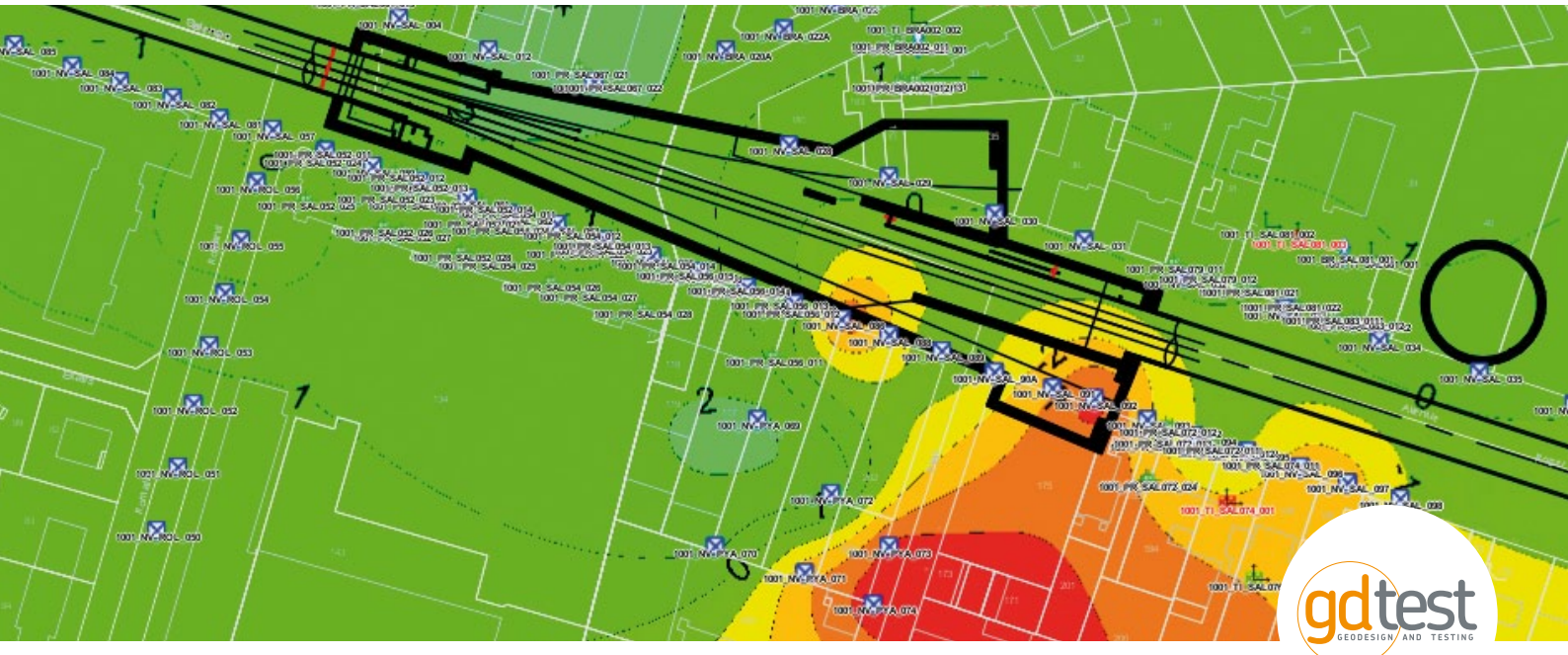
- Tunnel excavation face surveys and re-verification during construction of actual geotechnical characteristics of the underground formations
- Analysis and interpretation of the investigations and monitoring data
- Geotechnical assistance for the adaptation of the excavation methods and support of the underground works during construction
- Supervision services of investigation surveys, monitoring activities and geoengineering construction works

GIS Geographical Information Systems (SIT)



GIS Geographical Information Systems (SIT)

WEB-GIS portal configuration for geotechnical-environmental monitoring and for design support



Integrated monitoring systems for large works

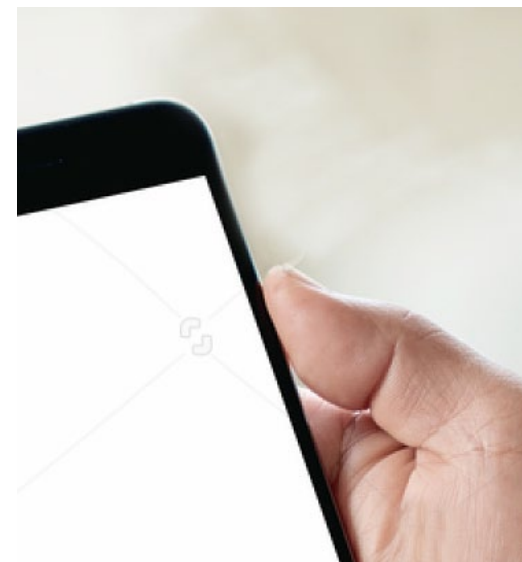
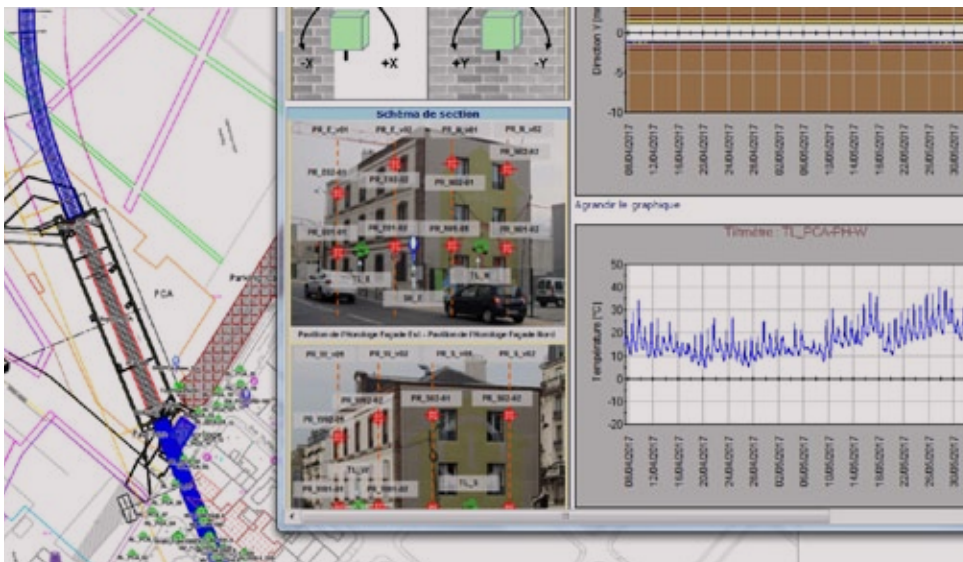
- Real-time data from automatic sensor collection agents
- Data base unified by equipment instrumentation type
- Measured data processing, alarm control and reporting through dedicated portal
- Comparison of various scenarios to support decision making
- Confidential data access from any device

Informative systems for environmental monitoring

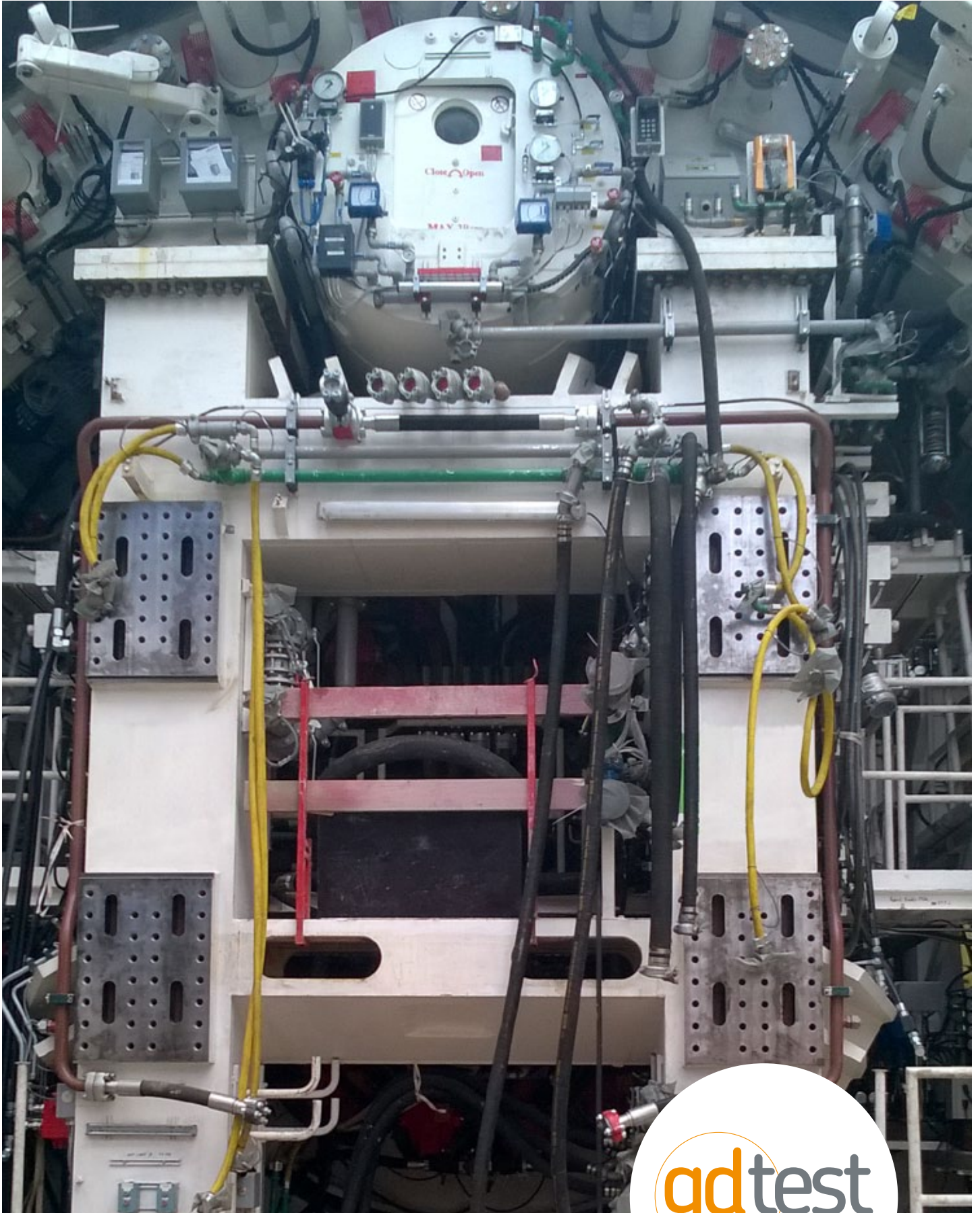
- Automated data collection and integrated document management
- Automatic integration of measuring points in mapping
- Measurement control and managing excess of normative limits
- Specialised thematic dashboards with guidance adapted also to mobile devices

Support for the design of large infrastructure works

- Simulated constructions for feasibility studies
- Management of 3D models of works in progress
- Evaluation of environmental impact
- Project images and survey results
- Building surveys and BRA/BCS analyses



Monitoring



Monitoring

Geotechnical, hydraulic, structural and environmental measuring
Data processing for the design and control of the security
of the territory and the infrastructure



Geotechnical measuring and controls

- Tunnel convergence measurements
- Geomechanical and extrusion of excavation face surveys
- Inclinometric, spirometric, extensometer and TDR (Time Domain Reflectometry) surveys
- Stress-strain measurements

Hydraulic-hydrogeological measures and controls

- Manual and automatic measuring
- Surveys of physico-chemical parameters of water (temperature, pH, redox and conductivity)

Structural Monitoring

- Crack pattern inspections and preservation of structures
- Topographical surveying and LIDAR
- Vibration surveys and monitoring
- Monitoring with ultrasound



Installation and setting up of monitoring systems

- Design and preparation of monitoring systems for controlling underground works, dams, infrastructures, historical monuments, hydrogeological instability
- Supply, installation and geotechnical, structural and environmental equipment maintenance via wireless and cable
- Data management in real time via WEB-GIS computer platforms



In situ testing and surveys



In situ testing and survey

Investigations, surveys and tests for geotechnical, geomechanical and hydrogeological characterization of in-situ rocks and soil



Assessment of physico-mechanical properties and natural stress state

- Large size sampling of rock and soil
- Sampling of cylinders through die-cutting and coring
- Density and water content tests of soil
- Load tests on plate (soil and rocks)
- Large scale tests of compression, shear and swelling
- Pressiometric and dilatometric borehole tests
- Single and double flatjack plate tests
- Overcoring 2D (Doorstopper) and 3D (CSIR, CSIRO) and undercoring tests
- Hydraulic fracturing tests (HF and HTPF)
- Dynamic tests on structural elements

Tests and structural controls

- Sclerometer and SonReb tests
- Pull-out test
- Flatjack tests
- Load tests on micropiles, piles and slabs
- Pachometer and thermographic surveys
- Foundation pile integrity tests
- Ultrasonic tomography testing on masonry, columns and walls
- Borehole core sampling

Hydraulic tests

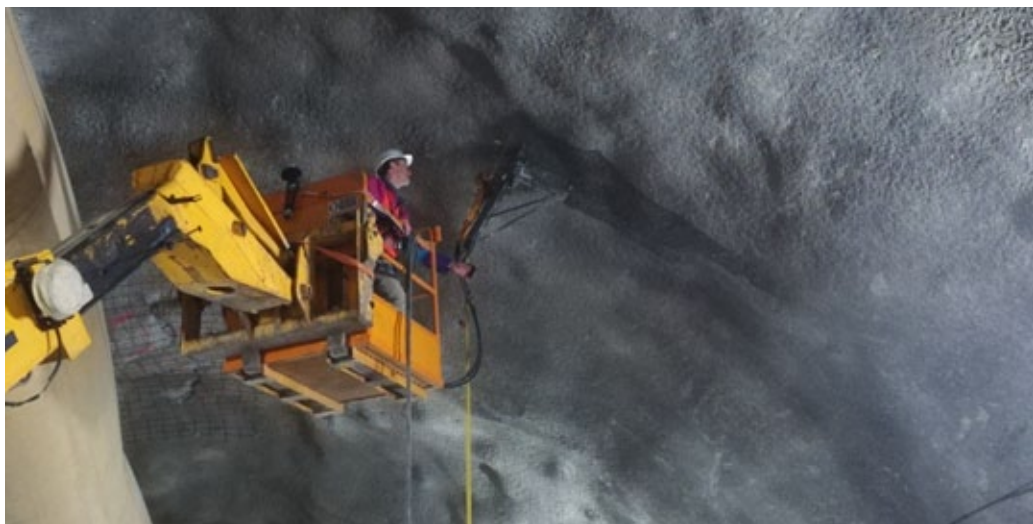
- Pumping tests and slug tests
- Lefranc and Lugeon permeability tests
- Flow measurements with tracers and micro impeller pumps

Geophysical surveys

- T2D and 3D seismic, electric and ultrasonic tomography
- Georadar (GPR) surveys of surfaces and in boreholes
- Vibration and noise measurements
- Sonic coring and dynamic pile testing
- Borehole logging, sonic (Full Waves), temperature, gamma rays, conductivity, spontaneous potential (SP), optical televiewer surveys (OPTV) and ultrasonic (BHTV) imaging
- Single and 2D multichannel analysis of surface waves (MASW) surveys
- Audio-magnetotelluric (AMT) surveys
- Seismic face surveys of tunnels under construction

Inspections

- Visual inspections of tunnel lining and structure
- Excavation profilometry and tunnel lining by means of 2D and 3D laser scanning systems
- Borehole inspections and surveys with colour television probe





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