

INNOVATION IN DMT & SDMT TESTING: TECHNOLOGICAL DEVELOPMENTS, ADVANCEMENTS IN INTERPRETATION AND RECENT APPLICATIONS

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ABSTRACT

In the recent years the flat dilatometer test (DMT) and the seismic dilatometer test (SDMT) are being increasingly used in site investigations, often in combination with cone/piezcone penetration tests (CPT/CPTU) according to a “multi-parameter / multi-test” approach. Several papers on DMT/SDMT have been presented in the latest editions of the ISC conference series. Based on the accumulated experience, major distinctive contributions that the DMT can provide in a routine site investigation have been identified to be: (1) information on stress history (which has a dominant influence on soil behavior) and horizontal stress; (2) being an in-situ pressure-displacement test, the DMT results are more closely related to “working strain” soil stiffness than penetration tests. The SDMT supplements the parameters measurable by DMT with the shear wave velocity V_s and thereby with information on small strain stiffness. The recently introduced Medusa DMT is the last-generation, fully automated version of the DMT. The probe is able to perform dilatometer tests using a standard blade without the pneumatic cable, the control unit and the gas tank required in the traditional pneumatic DMT. Its seismic version (Medusa SDMT) incorporates additional sensors for the measurement of the V_s .

This minisymposium aims to collect / share contributions and experience from researchers and practitioners on trending topics of DMT & SDMT research and practice, including technological developments, advancements in data interpretation and soil characterization, and recent design applications. The topics of the session include (but are not limited to):

- Technological developments of equipment (automated Medusa DMT/SDMT)
- Advancements in soil characterization and design applications by combined use of DMT & CPT (or other in-situ tests)
- New interpretation methods
- SDMT testing offshore/nearshore
- DMT testing in intermediate soils
- DMT testing in non-textbook soils (tropical, cemented, man-made deposits, tailings ...)
- DMT-based liquefaction assessment
- Deformation analyses based on stiffness decay curves derived from SDMT
- Case histories: DMT-based ground improvement control, settlement prediction, ...