



Training on LIQUEFACT Software for Liquefaction Mitigation Planning and Decision Support & LIQUEFACT EILD Customised Disaster Resilience Scorecard for Cities



An event has been held in the [sala 5 of the Building of Regione Emilia-Romagna in viale Silvani 6, Bologna](#) to train experts of emergency and management of the territory on the use of the Liquefact Software and to illustrate the disaster resilience scorecard for cities customised for liquefaction. The course has been attended by about thirty people coming from different public institutions.

LIQUEFACT Software for Liquefaction Mitigation Planning and Decision support

Background

LIQUEFACT software is a toolbox for that provides engineering guidance for liquefaction mitigation planning and decision support that will help end-users to assess liquefaction risk and develop mitigation plans in order to reduce the effects of earthquake-induced liquefaction damage. The LIQUEFACT software can be implemented for an individual level (single structure/infrastructure) as well as for region/city level (i.e. in an urban area). The software toolbox also includes procedures calculating economic and societal consequences; propose advanced risk reduction policies and strategies with outputs that can be easily understood by non-technical decision makers.

Aiming at increasing the applicability of the LIQUEFACT software and understanding of future users, a one-half day training workshop will be conducted on 14th of October 2019. Participants will be introduced the different procedures that are integrated in the software and providing a step-by-step description on the various protocols, the concept and philosophy of the analysis and processing features characterising the software. The training workshop will be conducted in an interactive mode and the participants will be encouraged to discuss their problems/queries encountered during practice.

Who should attend?

The training workshop is targeted to practicing engineers, researchers, risk engineers/managers (from construction and insurance industry) as well as non-technical decision makers who are involved in implementation/mitigation planning process and risk reduction policies and strategies.

Training Programme

The training programme is designed to follow the three main steps of the LIQUEFACT software concept: Step-1 evaluation of liquefaction hazard, Step-2 evaluation the impact on the asset (e.g. individual building/CI asset, portfolio of buildings/distributed infrastructure assets, etc.), and Step-3 development of mitigation framework taking into account result of cost-benefit analysis.

Part-1	<p>Methodologies and procedures integrated in the software</p> <p>Introduction to the different methodologies and procedures that have been integrated into an easy-to-use software toolbox to provide engineering guidance for the civil engineers during building design and implementation; with outputs that</p>
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	<p>can be easily understood by non-technical decision makers during the planning process.</p> <p>These methodologies and procedures are outputs from the different work packages in the LIQUEFACT consortium (WP2: regional assessment of liquefaction hazard in Europe; WP3: evaluation of infrastructure vulnerability and resilience within the region; WP4: development of appropriate mitigation options; and some extent WP5: socio-economic impact/implication).</p>
Part-2	<p>Processing and Concept of LIQUEFACT Software</p> <p>To describe the various protocols, the concept and philosophy of the analysis and processing features characterising the software, and the technology used for the software development.</p>
Part-3-1	<p>LIQUEFACT Software: Assess level of liquefaction risk (hazard assessment)</p> <p>How to evaluate liquefaction susceptibility and probability of liquefaction for a given susceptible category at specified level of ground shaking intensity.</p>
Part-3-2	<p>LIQUEFACT Software: Assess level of liquefaction threat on the asset (risk assessment)</p> <ul style="list-style-type: none"> • To evaluate the level of liquefaction threat on the asset (e.g. individual building/CI asset, portfolio of buildings/distributed infrastructure assets, etc.), where different approaches can be used in order to correlate the liquefaction-induced ground deformation (e.g. in terms of LSN intensity measure, LPI, PGA, Sa, Ground Deformation) with the built/infrastructure asset response/damage; • To assess the impact of the earthquake-induced liquefaction damage (EILD) event (damage probabilities) on the asset due to the occurrence of ground failure liquefaction and ground shaking; • To evaluate the impact (i.e. the damage and risk) on the functionality and performance of the asset; • To evaluate the socio-economic impact on the community;
Part-3-3	<p>LIQUEFACT Software: Development of Mitigation Framework (mitigation strategy)</p> <p>To evaluate the adoption of mitigation measures in terms of soil-structural improvements, cost and prioritize the mitigation measures.</p>