

MIRKO CORIGLIANO

PERSONAL DETAILS

Birth: [REDACTED]
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WORK EXPERIENCES

ENEL S.p.A. Global Thermal Generation Unit

Senior Civil Engineer, Geotechnical Earthquake Engineering

since 06/2013

Engineering and Construction Unit, Milan

12/2010 – 05/2013

Nuclear Technical Area, Rome

University of Pavia

A.Y. 2010-2011

Lecturer of graduate course "Foundations and Earth Retaining Structures" at the Engineering Faculty, Degree in Civil and Environmental Engineering.

A.Y. 2009-2010

EUCENTRE (Pavia)

European Centre for Training and Research in Earthquake Engineering

10/2007 – 12/2010

Researcher of the Geotechnical Earthquake Engineering and Engineering Seismology Section.

01/2007 – 09/2007

Research fellow at the Geotechnical Earthquake Engineering and Engineering Seismology Section.

11/2001 – 12/2003

Technical University of Turin

Collaboration with the Rock Mechanics Research Group, Structural and Geotechnical Engineering Department.

03/2002 – 02/2004

Studio Geotecnico Italiano s.r.l.

Geotechnical Engineer, Milan.

01/2002 – 02/2002

Si.Me.Te. s.n.c. (Studio O. Siniscalco)

Geotechnical Engineer, Turin.

EDUCATION AND TRAINING

2004-2006

PhD. in Geotechnical Engineering

Technical University of Turin,
Qualification obtained on 04/06/2007

1995-2001

Degree in Civil Engineering

Technical University of Turin,
Qualification obtained on 17/07/2001 (Summa cum Laude)

Postgraduate courses:

ROSE School (European School for Advanced Studies in Reduction of Seismic Risk): Seismic Response of Soil Structures and Foundations, Basics of seismology and seismic hazard assessment, Seismic Wave Propagation, Soil structure-interaction, Dynamic of structures, Non Linear Finite Element Analysis, Fundamental of seismic design, Seismic response of masonry structures.

Technical University of Turin: Constitutive Laws for Porous Materials, Measurement of soil parameters for Geotechnical Engineering, Soil Plasticity, Soil and waves.

LANGUAGES

- Italian: Native
- English: High level, both written and spoken
International English Language Testing System, IELTS: Academic module (07/2006)-6.5
Preliminary English Test (PET), University of Cambridge (06/2006) - pass with merit
- French: Scholastic level

SKILLS AND COMPETENCES

Social

I'm a proactive and dynamic person always used to work in international and multidisciplinary environment. I'm able to work in a self-organized way, as independent worker and collective team player.

Technical

Are part of my background: Probabilistic and Deterministic Seismic Hazard Analysis; Site response analysis; Definition of seismic input; Selection of accelerogram for dynamic analysis; Geotechnical characterization; Static and dynamic analysis of foundations and retaining structures; Analysis of soil-structure interaction; Seismic response of underground structures.

Computer

- WINDOWS, Internet
- Microsoft OFFICE (Excel, Word, Powerpoint)
- AUTOCAD
- Geotechnical software: FLAC^{2D}, Plaxis, Paratie, SlopeW, PHASE2, SETTLE 3D
- Geotechnical Earthquake Engineering and Engineering Seismology software: STRATA, EERA, NERA, DYNA6, SHAKE, Deepsoil, Wavenen, Grft12s, RSPMATCH
- Analysis of signals: Seismosignal, Degtra
- Software for seismic hazard analysis: EZ-FRISK, CRISIS, KERFRACT
- Programming languages: MATLAB and basic knowledge of PYTHON and FORTRAN

ADDITIONAL INFORMATION

Further qualifications

- 2015 Ordine degli Ingegneri di Milano (Register of Professional Engineers)- since 11/02/2015
- 2007 Mention to expert of Geotechnical topic at the Engineering Faculty of Pavia University
- 2002 Ordine degli Ingegneri di Torino (Register of Professional Engineers) - since 06/03/2002 to 10/02/2015
- 2001 Chartered Civil Engineer in Italy

Academic awards

- 2002 Construction of tunnels titled to Prof. G. Dardanelli (Association of Ex-Alumni Technical University of Turin)
- 2005 In memory of Eng. G. Vigliano (Technical University of Turin)

Author of software

ASCONA: Automated Selection of COmpatible Natural Accelerograms – MATLAB code for selection of Natural accelerograms spectrum-compatible (Corigliano et al., 2012)

Other experiences

- Teaching activities As expert on Geotechnics at the Faculty of Engineering of University of Pavia, between 2007 and 2011, I taught courses in the field of Geotechnical Engineering and Foundations.
From 2006 I was involved in teaching activities at professional updating courses in the field of Geotechnical Earthquake Engineering and Foundations.
In 2016 I was lecturer of the module "Seismic design of underground structures" at the Post Graduate Master in "Tunnelling and Tunnel Boring Machines", Politecnico di Torino.
- Abroad experiences On February 2010 I did a period at the Research group of prof. M. Cubrinovski, School of Engineering, Canterbury University, Christchurch (New Zealand).
- Invited speaker - February 2017, XVI Ciclo Conferenza Nazionale di Meccanica delle Rocce (Politecnico di Torino) on topic "Progettazione di gallerie profonde in condizioni sismiche"
- December 2011, Colloquium of the ETH in Zurich on topic "Tunnel under seismic conditions".

MAIN PROFESSIONAL EXPERIENCES

Nuclear and industrial plants:

- Developing of ENEL guidelines for the implementation of stress tests on the seismic events. "Guidelines for NPP Stress Test: Earthquake". On Behalf of: ENEL S.p.A.
- Vandellos II Nuclear Power Plant (Spain): Review of stress test documentation prepared by ANAV concerning seismic hazard, and civil aspects of design basis and beyond design basis. On Behalf of: ENEL S.p.A.
- Ascò Nuclear Power Plant (Spain): Review of stress test documentation prepared by ANAV concerning seismic hazard, and civil aspects of design basis and beyond design basis. On Behalf of: ENEL S.p.A.
- Mochovce Nuclear Power plant (Slovakia): Technical coordinator and author of the guidelines for the task of the assessment of Seismic Interaction of the Conventional Island, Nuclear Island and Auxiliary building of Unit 3 & 4. On Behalf of: ENEL S.p.A.
- Design of geotechnical aspects (characterization, dewatering and retaining walls, etc.) for preliminary design of intake channel of Nuclear Power Plant. On Behalf of: ENEL S.p.A.
- Definition of guidelines for "Design Input for Nuclear Power Plant - Chapter: Structures, Systems and Components – Salient Requirements". On Behalf of: ENEL S.p.A.
- Project SIGMA: Seismic Ground Motion Assessment (<http://projet-sigma.com/>) – French/Italian Research project for characterization of seismic input. Project coordinator of WP1: Seismogenic sources Partners: ENEL, EDF, AREVA and CEA. Since 2013 coordinator of the Italian part. Partners: ENEL, EDF, AREVA and CEA. On Behalf of: ENEL S.p.A.
- Mochovce Nuclear Power plant (Slovakia): Definition of seismic concept seismic re-qualification of Mochovce Units 1&2 Nuclear Power Plant (Slovakia). Chapters: Seismic input; Soil-structure interaction; In-structure response spectra. On Behalf of: ENEL S.p.A.
- Mochovce Nuclear Power plant (Slovakia): Seismic stability assessment of Tanks of Unit 3&4 of Auxiliary building. On Behalf of: ENEL S.p.A.
- GNL Porto Empedocle plant – Underground storage tanks: Contribution in the definition of technical specifications concerning maritime works, dredging, diaphragm wall, seismic input. On Behalf of: ENEL S.p.A.
- Brindisi Sud Power plant– New covered coal park: Review of the calculation report of the foundation shaft Stackers. On Behalf of: ENEL S.p.A.
- Industrial Escravos Gas To Liquid Plant (EGTL) NIGERIA.
Aid in preliminary design concerning the geotechnical aspects of the plant and wharf: Bearing capacity and load settlement curve of driven piles; negative skin friction; total and differential settlement of the raft foundations.
Client: TECHNIP S.p.A., Roma. - On Behalf of: Studio Geotecnico Italiano s.r.l.
- Mochovce Nuclear Power plant (Slovakia): Computation of the matrix impedance function and foundation input motion for dynamic analysis of building object of seismic re-assessment of Unit 1&2. On Behalf of: ENEL S.p.A.
- Malacas power plant (Perù) – Unit 6 Simple Cycle Gas Turbine: Technical specification for tender of Power Train, Gas Station and Auxiliaries supply, Civil part; Technical specification for tender of Balance of Plant Contractor, Civil part. Technical alignment of the bidders.
On Behalf of: ENEL S.p.A.
- San Isidro Power Plant (Chile), Support to the Geotechnical activities for basic design of desalination plant.
On Behalf of: ENEL S.p.A.
- Fortaleza Power Plant (Brasil), Support to the Geotechnical activities for basic design of desalination plant.
On Behalf of: ENEL S.p.A.
- Drafting and review of the Geotechnical - Discipline Engineering Operating Manual.
On Behalf of: ENEL S.p.A.
- Fusina Power Plant (Italy) - Geotechnical support for the definition of the environmental barrier of the Porto Marghera South Channel.
On Behalf of: ENEL S.p.A.
- Costanera Power Plant (Argentina) – Geotechnical support for the GT relocation.
On Behalf of: ENEL S.p.A.

Engineering seismology:

- Definition of Design Earthquake in Some Areas in Tuscany of Major Seismic Risk. Selection of spectrum compatible time histories for numerical analyses.
Client: Tuscany Region (Italy). On Behalf of: EUCENTRE
- Design Earthquake at Construction Site of ICOM Commercial Park (IMM-EU, Catania)
Deterministic and probabilistic seismic hazard assessment at the construction site (Catania).
Client: IMMOBILIAREUROPEA S.p.A. On Behalf of: EUCENTRE
- Definition of Seismic Input at the Regina Montis Regalis Cathedral of Vicoforte (Cuneo). Probabilistic and Deterministic seismic hazard assessment, selection of spectrum compatible accelerograms and site response analyses 1D and 2D.
Client: Fondazione Cassa di Risparmio di Cuneo . On Behalf of: EUCENTRE
- EELT Telescope Project (Ventarrones, Chile). Probabilistic seismic hazard assessment and selection of accelerograms, at the construction site of ESO-EELT telescope.
Client: Asdea S.r.l. On Behalf of: EUCENTRE
- Probabilistic Seismic Hazard Assessment for Eastern Caribbean Islands. Research and scientific cooperation project funded by the Municipality of Milan (Italy) through the Bid "Milan for Biodiversity 2008" with title: "Assessment and Mitigation of Seismic Risk in the Eastern Caribbean Islands". On Behalf of: EUCENTRE

- Probabilistic Seismic Hazard Assessment for the evaluation of uniform hazard spectra, geotechnical characterization and site response analysis 1D for the evaluation of the vulnerability of historical centres in Southern India. Research project funded by the Italian Ministry of Foreign Affairs within the program of scientific and technological cooperation between Italy and India 2005-2007 for the component titled "Seismic Vulnerability of Historic Centres in Southern India" task related to the definition of "Definition of seismic input".
On Behalf of: EUCENTRE
- Construction of the homogeneous earthquake catalogue for Spain (definition of magnitude conversion relationships between different magnitude metric and intensity to magnitude).
On Behalf of: ENEL S.p.A.
- Selection of natural accelerograms spectrum compatible in acceleration and displacement for the definition of the seismic input for dynamic analysis of preliminary design of the isolation system of an European Pressurized Reactor (EPR) Unit.
On Behalf of: ENEL S.p.A.
- Mochovce Nuclear Power Plant (Slovakia): Sensitivity analysis for the evaluation of the impact on seismic hazard of new seismological evidences (i.e. earthquake catalogue, seismic zonation, GMPEs, etc.).
On Behalf of: ENEL S.p.A.
- Mochovce Nuclear Power Plant (Slovakia): Selection of natural accelerograms spectrum compatible in acceleration and displacement for the definition of the seismic input for dynamic analysis for the seismic reassessment of Units 1&2.
On Behalf of: ENEL S.p.A.

Geotechnical engineering:

- Line 1 of the Subway of Turin - (Stretch 4 Pozzo Strada - Principi d'Acaja). Detail design of underground stations and ventilation shafts.
Client: Association of temporary company - Grandi Lavori Fincosit S.p.A. - Seli S.p.A.
On Behalf of: Si.Me.Te. s.n.c.
- Lamezia Terme - Catanzaro Lido Rail Link, Italy. Section Settingiano-Catanzaro Lido. Assistance to final design of the railway line, including three tunnels, two of which are expected to be excavated with a TBM. Preparation of drawing and reports with special reference to the portals of tunnels and associated geotechnical and structural analyses.
Client: ITALFERR S.p.A - On Behalf of: Studio Geotecnico Italiano s.r.l.
- Underground LNG tanks, Lamezia Terme (RC) e Corigliano Calabro (CS), Italy. Preliminary geotechnical analyses of the retaining structures for large diameter underground tanks 30 m deep in water bearing soils (Lamezia Terme) or in very soft clay subject to artesian pressure (Corigliano Calabro).
On Behalf of: Studio Geotecnico Italiano s.r.l.
- Railway link Messina-Palermo. Section Rometta - Pace del Mele. Executive design of interventions for restoration and put in safety of the area interested by the landslide crossed by the initial section of the tunnel Scianina-Tracocchia, Messina side.
Client: Technital S.p.A. - On Behalf of: Studio Geotecnico Italiano s.r.l.
- Hydroelectric plant of Pont Ventoux - Susa. Stretch Val Clarea - Finestra 2. Numerical analysis, with FLAC2D code, for verification of final lining of the hydraulic derivation tunnel in presence of transitory events that pressurise the tunnel, in the hypothesis of lining only partially collaborating and taking into account the variation of section thickness consequent to re-profiling of excavation.
Client: AEM (Azienda Elettrica Municipale di Torino) - On Behalf of: Politecnico di Torino
- Hydroelectric plant of Pont Ventoux - Susa. Finestra 4. Geotechnical characterisation of tectonic zone of hydraulic pressure tunnel and numerical analysis, with FLAC2D code, for verification of final reinforcement lining of tunnel.
Client: AEM (Azienda Elettrica Municipale di Torino) - On Behalf of: Politecnico di Torino
- Hydroelectric plant of Pont Ventoux - Susa. Stretch Val Clarea - Finestra 4. Numerical analysis for verification of final lining of hydraulic pressure tunnel and determination of the highest outside hydraulic load tolerable by the lining in the hypothesis of future raising of the watertable.
Client: AEM (Azienda Elettrica Municipale di Torino) - On Behalf of: Politecnico di Torino
- Specialized consultancy for the assessment of earthquake induced effects on the Ceneri Tunnel, San Gottardo.
Client: Alptransit San Gottardo.
- Milan-Genoa High Speed Rail Link "Terzo Valico dei Giovi", Italy Preliminary geomechanical characterization for tunnel design. Analysis of the results of the supplementary ground investigation carried out in 2001 - 2002.
Client: Consorzio Cociv - On Behalf of: Studio Geotecnico Italiano s.r.l.
- Hydroelectric power plant of Pont Ventoux - Susa. Finestra 4. Geotechnical characterization of the "tectonized band" in the off-take channel in pressure. Client: AEM (Azienda Elettrica Municipale di Torino)
Client: AEM (Azienda Elettrica Municipale di Torino) - On Behalf of: Politecnico di Torino
- Assessment of the stability of the Rio Fucino Dam (AQ) induced by the possible interaction with the Campotosto Fault. Numerical analysis.
On Behalf of: EUCENTRE.
- New State Highways S.S. 38 "dello Stelvio" from Colico to Bormio. Stretch I - From prog 15+300 to prog 19+250. Geotechnical and geomechanical characterisation for detail design of main structures (e.g. bridges, viaducts, embankments and tunnels). Preliminary geotechnical design of structures, including deep and shallow foundations of viaducts, deep foundations of bridges with piers in the river, temporary retaining structures for excavations below watertable and embankments.
Client: Metropolitana Milanese/ Technital - On Behalf of: Studio Geotecnico Italiano s.r.l.
- Neltume hydroelectric power plant (Chile) - Basic design of adduction tunnel in the volcanic slag stretch: Geotechnical characterization; numerical modelling; design of preliminary and final lining; monitoring plane.
On Behalf of: ENEL S.p.A.

Structural and geotechnical survey after earthquakes:

- Salò Earthquake (BS), 25 November 2004
- L'Aquila Earthquake (AQ), 6 April 2009

Expertise for tribunal on behalf of CTP or CTU:

- Consultancy on behalf of CTP in charge, concerning the assessment of effects induced by an excavation on a masonry historical building.
On Behalf of CTP: Proff. G. Magenes, C.G. Lai
- Consultancy on behalf of CTU in charge of a Civil arbitration.
On Behalf of CTU: EQCO Earthquake Consulting, Pavia
- Assessment of damage induced by a landslide on a building.
On Behalf of CTP: Ing. Guerrini, Pavia

SCIENTIFIC PUBLICATIONS

I'm author of over 40 publications in journals, and national and international conferences. I have also been a reviewer for scientific journals: Earthquake Spectra, Journal of Earthquake Engineering, Rock Mechanics and Rock Engineering, Progettazione sismica.

List of main publications:

- Vanini M., Corigliano M., Faccioli E., Figini R., Luzi L., Pacor F., Paolucci R. (2017). Improving seismic hazard approaches for critical infrastructures: a pilot study/project in the Po plain. Bulletin of Earthquake Engineering online.
- Corigliano M (2017). Progettazione di gallerie profonde in condizioni sismiche. XVI Ciclo Conferenza Nazionale di Meccanica delle Rocce, 16-17 Febbraio 2017 (Politecnico di Torino).
- Corigliano M., Lai C.G., Scandella L., Spacone E., Camata G., Cantagallo C., Spallarossa D., Ghiretti P. (2014). Probabilistic seismic hazard assessment of the European Extremely Large Telescope ("E-ELT") Project (Chile). Tenth U.S. National Conference on Earthquake Engineering Frontiers of Earthquake Engineering. July 21-25, 2014 Anchorage, Alaska.
- Zuccolo E., Corigliano M., Lai C.G. (2014). Selection of spectrum-and seismo-compatible accelerograms for the Tuscany region in Central Italy. Soil Dynamic and Earthquake Engineering, (66), 305-313.
- Zuccolo E., Corigliano M., Lai C.G. (2013). Probabilistic seismic hazard assessment of Italy using kernel estimation methods. Journal of Seismology, Volume 17, No 3, pp 1001-1020.
- Taverna L., Zuccolo E., Corigliano M., Rota M., Lai, C. G., Penna A. (2013). Definizione di accelerogrammi reali spettro-compatibili per l'intero territorio nazionale. Progettazione Sismica. Vol. 4 N°2, 63-79.
- Corigliano M., Lai C.G., Menon A., Ornthammarath T. (2012). Seismic input at the archaeological site of Kancheepuram in Southern India. Natural Hazard. Vol. 63, No 2, pp 845-866.
- Rota M., Zuccolo E., Taverna L., Corigliano M., Lai C. G., Penna A. (2012). Mesozonation of the Italian territory for the definition of real spectrum-compatible accelerograms. Bull. Earthquake Eng. Vol. 10, N 5, 1357-1375.
- Corigliano M., Lai C.G., Rota, M., Strobbia C. (2012) ASCONA: Automated Selection of COmpatible Natural Accelerograms. Earthquake Spectra, Vol. 28, No 3, pp. 965-987.
- Corigliano M., Scandella L. Lai C.G., Paolucci R. (2011) Seismic Analysis of Deep Tunnels in Near Fault Conditions: a Case Study in Southern Italy. Bulletin of Earthquake Engineering. Vol. 9, N 4, 975-995.
- Bozzoni F., Corigliano M., Lai C.G., Salazar W., Scandella L., Zuccolo E., Latchman J., Lynch L., Robertson R. (2011). Probabilistic Seismic Hazard Assessment at the Eastern Caribbean Islands. Bulletin of Seismological Society of America, Vol. 101, No. 5, pp. 2499-2521.
- Scandella L., Lai C.G., Spallarossa D., Corigliano M. (2011) Ground shaking scenarios at the town of Vicoforte, Italy. Soil Dynamic and Earthquake Engineering (31) 757-772
- Bozzoni F., Scandella L., Lai C.G., Corigliano M. (2011) Stima del danno sismico di porti marittimi attraverso la tecnologia GIS: il caso del porto di Salerno. Progettazione Sismica, vol. 1, pp. 117-137.
- Pasquali R., Lai C. G., Corigliano M. (2010). Some Issues in Seismic Analysis and Design of Blockwork Wharves. Journal of Earthquake Engineering, Vol. 14, No 1, 102-130.
- Menon A., Ornthammarath T., Corigliano M., Lai C.G. (2010). Probabilistic Seismic Hazard Macrozonation of Tamil Nadu in Southern India. Bulletin of Seismological Society of America, Vol. 100, No. 3, 1320-1341.
- Corigliano M., Lai C.G., Barla G. (2009). Approcci Semplificati nella Progettazione Sismica di Gallerie Profonde. Progettazione Sismica. N°1 Gennaio-Aprile 2009
- Lai C.G., Corigliano M., Agosti M. (2009) Dighe e terremoti: Il caso Aquilano. Progettazione Sismica. N°3 Settembre-Dicembre 2009
- Lai C.G., Corigliano M., Sanchez H. (2009). Some examples of 1D fully stochastic site response analyses of soil deposits. Advances in Performance-Based Earthquake Engineering, Geotechnical, Geological, and Earthquake Engineering 13, Springer, Editor: Fardis.

I authorize to use my personal data in accordance with the Italian law D.L. 30/06/2003, n. 196 "Codice in materia di protezione dei dati personali" and the corresponding European law.