Computational Dynamics & Energy Research Group

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○ **Research activities**

Computational Dynamics and Energy (CODEN) research group of TUC main expertise is the development and application of advanced simulation techniques and computational methods for structures and infrastructures (buildings, geostructures, lifelines, etc). Research interests of CODEN group include structural and geotechnical earthquake engineering, soil-structure interaction, structural optimization, probabilistic mechanics, structural integrity assessment & monitoring, mitigation of geohazards, life-cycle analysis & performance-based design, artificial intelligence methods in engineering, etc. CODEN group has many cooperations with other scientific groups in Greece and abroad (USA, UK, Italy, Germany, France, Serbia, Japan, etc) and has participated in national and international projects.
CODEN group has given special emphasis on various earthquake engineering applications for buildings, infrastructure and energy. Protection of the environment, population and energy infrastructures (transportation networks, pipelines, plants, tanks, etc) from natural and man-made disasters. Indicative research fields: α) design of onshore and offshore gas pipelines against geohazards (active faults, landslides, soil liquefaction, etc), b) seismic design of liquid fuel tanks and storage terminals, c) onshore and offshore wind turbine design with emphasis on dynamic soil-structure interaction, d) seismic vulnerability of dams, waste landfills, tailings dams, etc.

○ **Lab Infrastructure**

- Computer resources.
- Specialized finite element software.

○ **Research projects**

- Research Program Thalis, 'Wireless admittance-based structural health monitoring system", Co-funded by Greek General Secretary of Research and Technology and European Union, 2012-2015.
- TEMPUS Programme, "Development of sustainable interrelations between education, research and innovation at WBC Universities in 2013-2017.
- Research Program Hrakleitos, "Advanced seismic design methods for geosynthetically reinforced embankments", Co-funded by Greek General Secretary of Research and Technology and European Union, 2011-2015.
- Research grant by Greek Ministry of Development-General Secretariat of Research and Technology "Numerical investigation of an elastic foundation method for buildings, 2010-2011.
- TEMPUS Programme, nanotechnologies and advanced materials where innovation means business", "Engineering science master module founding", 2006-2009.
- Research Program PENED, "Seismic response of waste landfills", Co-funded by Greek General Secretary of Research and Technology and European Union, 2005-2010.