

## CURRICULUM VITAE

### Antonio Gens

Catedràtic d'Enginyeria del Terreny

Institució: Divisió d'Enginyeria del Terreny, Cartogràfica i Geofísica  
Departament d'Enginyeria Civil i Ambiental  
E.T.S. d'Enginyers de Camins, Canals i Ports de Barcelona  
Universitat Politècnica de Catalunya

Nacionalitat: Espanyola

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### Títulos académicos

|      |                                                          |                                                                            |
|------|----------------------------------------------------------|----------------------------------------------------------------------------|
| 1972 | Enginyer de Camins, Canals i Ports                       | E.T.S. Ingenieros de Caminos, C. y P.<br>Universidad Politécnica de Madrid |
| 1973 | M.Sc. & D.I.C.                                           | Imperial College, Londres                                                  |
| 1982 | Ph.D.                                                    | Imperial College, Londres                                                  |
| 1983 | Doctor Enginyer de Camins, Canals i Ports (convalidació) | Ministerio de Educación (España)                                           |

### Puestos ocupados

|           |                                         |                                                                       |
|-----------|-----------------------------------------|-----------------------------------------------------------------------|
| 1974-1976 | Enginyer                                | RODIO                                                                 |
| 1976-1978 | Estudiant de Doctorat                   | Imperial College, Londres                                             |
| 1978-1982 | Ajudant de Recerca (Research Assistant) | Imperial College, Londres                                             |
| 1983-1988 | Professor Titular d'Universitat         | Universidad Politécnica de Cataluña                                   |
| 1988-     | Caedràtic d'Universitat                 | Universidad Politécnica de Cataluña                                   |
| 2013-2017 | Vice-President per Europa               | International Society for Soil Mechanics and Geotechnical Engineering |

## **Cargos académicos**

Membre de la Comissió per a la Selecció i Avaluació del Personal Docent i Investigador (CSAPDIU). Universitat Politècnica de Catalunya (des de 2015)

Membre del Claustre de la Universitat Politècnica de Catalunya (des de 2006)

Vicepresident del Consell de Departaments de la Universitat Politècnica de Catalunya (2005-2006)

Director del Departament d'Enginyeria del Terreny, Cartogràfica i Geofísica, Universitat Politècnica de Catalunya (1999-2006).

Membre de la Junta de Govern de la Universitat Politècnica de Catalunya (2002 - 2006)

Membre de la Comissió Permanent de la Junta de Govern de la Universitat Politècnica de Catalunya (2005-2006)

Membre de la Comissió de Recerca, Universitat Politècnica de Catalunya (2003 - 2005)

Membre de la Comissió de Personal i Acció Social de la Universitat Politècnica de Catalunya (2003 - 2005)

Membre de la Comissió de Docència, Universitat Politècnica de Catalunya (2002-2003)

Membre de la Comissió de Desenvolupament Estatutari, Universitat Politècnica de Catalunya (2002-2003)

Sotsdirector de Pla estratègic, E.T.S. d'Enginyers de Camins, Canals i Ports, Universitat Politècnica de Catalunya (1996-1997)

Secretari General i Sotsdirector d'Afers Econòmics de la E.T.S. d'Enginyers de Camins, Canals i Ports, Universitat Politècnica de Catalunya (1994-1996)

## Premis

- Kevin Nash Gold Medal. International Society for Soil mechanics and Geotechnical Engineering. 2017
- Distinció de AETESS (Associació d'Empreses de la Tecnologia del Sòl i del Subsòl). 40 Aniversari de l'Associació.
- Cross Canada Lecture Tour. Canadian Geotechnical Society. 2016.
- Premi UPC a la Qualitat en la Docència Universitària. Consell Social. Universitat Politècnica de Catalunya. 2016.
- Medall Narcís Monturiol. Generalitat de Catalunya. 2015.
- Mont Terri project Award. Mont Terri Consortium, Suïssa. 2015.
- Medalla d'Honor del Col·legi Nacional d'Enginyers de Camins, Canals i Ports. 2014.
- Geotechnical Research Medal. Institution of Civil Engineers. UK. 2014.
- Doctor Honoris Causa. Université de Grenoble, França. 2014.
- Vicepresident per a Europa (1er vicepresident). Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica. 2013-2017.
- Conferència Šuklje. Societat Geotècnica Eslovena, Ljubljana, Eslovènia, 2013.
- Conferència Coulomb. Comité Français de Mecànica donis Sols et la Géotechnique, Paris, França, 2013.
- Medalla George Stephenson. Institution of Civil Engineers, Regne Unit. 2012.
- Membre (Fellow) de la Royal Academy of Engineering del Regne Unit. Des de 2011.
- Outstanding Contribution Award. International Association for Computer Methods and Advances in Geomechanics (IACMAG). 2011.
- R.M. Quigley Award (primer premi). Canadian Geotechnical Society. 2009.
- George Stephenson Medal. Institution of Civil Engineers, Regne Unit. 2008.
- The Golders Associates Distinguished Lecture. Queen 's University, Kingston, Ontario, Canadà, 2008.
- Medalla Telford. Institution of Civil Engineers, Regne Unit. 2007.
- 47th Conferència Rankine. Londres, British Geotechnical Association, 2007.
- Conferència anual. Tunnel and Underground Construction Society, Singapur (TUCSS). 2007
- Medalla Ildefons Cerdà Medal. Delegació del Col·legi d'Enginyers de Camins, Canals i Ports de Catalunya, 2007.
- Rock Mechanics Casi History Award. American Rock Mechanics Association, 2006
- Membre de la Reial Acadèmia Europea de Doctors de Barcelona. Des de 2005.
- Medalla de la E.T.S. d'Enginyers de Camins, Canals i Ports de Barcelona. 2004.
- Medalla Chandra Desai. International Association for Computer Methods and Advances in Geomechanics. 2001.
- 8th Prague Lecture. Comitè txec i eslovac de Mecànica del Sòl i Enginyeria Geotècnica. 2000.
- British Geotechnical Society Touring Lecturer. 1998.
- Premi José Torán (accèssit). Comitè Espanyol de Grans Preses. 1995.

- Medalla Telford. Institution of Civil Engineers. Regne Unit. 1994.
- Visiting Fellowship Research Grant. Imperial College. London. Engineering and Physical Sciences Research Council. Regne Unit. 1994-1996
- NATO Fellowship (Beca) per a una estada al MIT. 1991.
- Beca per a estudis al Regne Unit. Fundació Juan March. 1977-1978.
- Beca per a estudis al Regne Unit. British Council. 1976-1977
- Beca "C.H. Roberts Bequest "(Beca per a estudis al Regne Unit). Institution of Civil Engineers i British Council. 1972-1973.
- Premi Escalona al número 1 de la promoció. E.T.S. d'Enginyers de Camins, Canals i Ports de Madrid.

## **Conferències plenàries i especials (keynote).**

Participació especial en més de 100 Congreos i Simposis internacionals. Algunes conferències seleccionades:

- Conferència especial (keynote) d'apertura. "Deep underground excavations in argillaceous rocks". Mont Terri Consortium Technical Meeting. Porrentruy, Switzerland
- Conferència convidada. "Coupled THM processes and nuclear waste disposal in argillaceous materials". International Workshop on Coupled Processes in Geological Disposal of Nuclear Waste and Underground Research Laboratory. Seoul, Korea. 2018.
- Conferència especial (keynote). "Underground Research Laboratories in nuclear waste containment". International Symposium on Energy Geotechnics SEG-2018. Lausanne, Switzerland. 2018.
- Conferència especial (keynote). "On the hydration of unsaturated barriers for high-level nuclear waste disposal". The 7th International Conference on Unsaturated Soils (UNSAT 2018). Hong-Kong 2018
- Conferència especial (keynote). "Irreversible behaviour of crushable sands: a DEM study". 15th International Conference of the Association for Computer Methods and Advances in Geomechanics. Wuhan, China. 2017.
- Conferència especial (keynote). "Geomechanics of clay rocks". The 7th International Conference on clays in natural and engineered barriers for radioactive waste confinement. Davos, Switzerland. 2017.
- Conferència convidada. "Analysis of the cone penetration test". TC 103 Workshop. 19th International Conference on Soil Mechanics and Geotechnical Engineering. Seoul, Korea. 2017
- Conferència convidada. "Large scale tests for high-level nuclear waste disposal". TC 308 Workshop. 19th International Conference on Soil Mechanics and Geotechnical Engineering. Seoul, Korea. 2017
- Conferència plenària convidada. "Simulation of penetration problems in Geomechanics". XIV International Conference on Computational Plasticity. Fundamentals and Applications. COMPLAS 2017. Barcelona, Spain. 2017.
- Conferència especial (keynote). THM interactions in nuclear waste repositories: lessons form large scale tests". International Symposium on Coastal and Offshore Geotechnics (ISCOG 2017) & International Conference on Gep-Energy and Geo-Environment (geGe 2017). Hangzhou, China. 2017.
- Conferència convidada. "On the Mechanical Behaviour of Bentonite - Why Beacon". Beacon Workshop on Mechanical Properties of Bentonite Barriers. Kaunas, Lithuania. 2017.
- Conferència especial (keynote). "Modelling the Mechanical Behaviour of Callovo-Oxfordian Argillite. Formulation and Application" International Workshop: Advances in Laboratory Testing & Modelling of Soils and Shales (ATMSS). Villars-sur-Ollon, Switzerland. 2017.

- Conferència especial (keynote). “Simulation of the cone penetration test: discrete and continuum approaches”. 5th International Conference on Geotechnical and Geophysical Site Characterisation, ISC’5. Gold Coast, Queensland, Australia. 2016.
- Conferència especial (keynote). “Failure of a harbour quay founded on soft ground”. 4th International Conference on New Developments in Soil Mechanics and Geotechnical Engineering. Near East University, Nicosia, North Cyprus. 2016.
- Conferència especial (keynote). “The International Society for Soil Mechanics and Geotechnical Engineering”. The 17th Nordic Geotechnical Meeting. Reykjavik, Iceland, 2016.
- Conferència convidada. “Plasticity and DEM”. 80th Anniversary of the Geotechnical Engineering Group. EPFL. Lausanne, Switzerland, 2016.
- Conferència especial (keynote). “The role of geotechnics in high-level nuclear waste disposal”. 5th International Workshop of Young Doctors in Geomechanics, W(H)YDOC 15. Paris, France, 2015.
- Conferència plenària convidada. “Controlling tunnelling-induced ground movement in Barcelona Metro construction”. European Conference on Geo-Environment and Construction. Tirana, Albania, 2015.
- Conferència plenària. “Plasticity in Crushable Granular Materials via DEM”. XIII International Conference on Computational plasticity. COMPLAS XIII. Barcelona. 2015.
- Conferència especial (Theme lecture). “THM analysis of pellet-based materials for engineered barriers for nuclear waste”. 7th International Congress on Environmental Geotechnics. Melbourne, Australia. 2014.
- Conferència plenària. “Failure of a harbour quay founded on soft ground”. 7th PanHellenic Conference on Geotechnical Engineering. Atenas, Greece, 2014.
- Conferència especial (keynote). “Constitutive model for expansive clays under chemical changes”. Session on Multiphysics Modelling of Porous Media: Geomaterials, Biomaterials and Others. 11th World Congress on Computational Mechanics (WCCM XI). Barcelona, España, 2014.
- Conferència plenària. “Unsaturated soil mechanics in deep geological repositories”. 1st Geoffrey Bight Lecture. 6th International Conference on Unsaturated Soils. Sydney, Australia, 2014.
- Conferència semi- plenària. “Evolving heterogeneity in unsaturated clay barriers”. 6th International Conference on Unsaturated Soils. Sydney, Australia, 2014.
- Conferència especial (keynote). “THM behaviour of argillaceous rocks for nuclear waste containment. Observations and modelling”. 10th Euroconference on Rock Physics and Rock Mechanics. Aussois, Francia, 2014.
- Conferència especial (keynote). “Coupled modelling of barriers for radioactive waste disposal”. Coupled Phenomena in Environmental Geotechnics. A TC 215 Symposium. Turín, Italia, 2013.
- Conferència convidada. “Homogenization in clay barriers and seals: two case studies”. International Symposium on Unsaturated Soils and Deep Geological Disposal. UNSAT-WASTE 2013. Shanghai, China, 2013.

- Conferència especial (keynote). “Coupled thermo-hydraulic-mechanical analyses of freezing soils”. 5<sup>th</sup> International Conference on Coupled problems in Science and Engineering. Ibiza, 2013.
- Conferència convidada especial. “Stiff clays and mudstones: fundamentals, progressive failure and deep underground excavations”. 20 Darmstädter Geotechnik-Kolloquium an der TU Darmstadt. Jubiläumskolloquium, Darmstadt, Alemanya, 2013.
- Conferència especial (keynote). “Ventilation effects in an argillaceous rock tunnel examined via unsaturated soil mechanics”. 1st Pan-American Conference on Unsaturated Soils. Cartagena de Indias, Colombia, 2013.
- Conferència especial plenària. “Numerical simulation of THMC phenomena associated with jet-grouting”. ICGI 2012, International Conference on Ground Improvement and Ground Control. Wollongong, Australia, 2012.
- Conferència especial (keynote). “Some applications of unsaturated soil mechanics”. AP- Conferència, 5th Asian-Pacific Conference on Unsaturated Soils, Pattaya, Tailandia, 2012
- Conferència anual. “Excavaciones de túneles ferroviarios en el entorno de Barcelona”. Sociedad Española de Mecánica del Suelo e Ingeniería Geotécnica, Madrid, 2012.
- Conferència convidada especial. “The role of suction in geotechnics: unsaturated soils, freezing soils and expansive rocks”. XIII Congresso Nacional de Geotecnia, VI Congresso Luso-Brasileiro de Geotecnia, Lisboa, Portugal, 2012.
- Panel, contribució convidada. “Multi-scale characterization and Modeling of Heterogeneous Soils”, Geo-Congress: State of the Art and Practice in Geotechnical Engineering, Geo-Institute, Oakland, CA, USA, 2012.
- Conferència convidada. “Comportamiento hidromecánico de rocas blandas arcillosas”, Jornada Técnica: Ingeniería en rocas blandas, Sociedad Española de Mecánica de Rocas, Madrid, 2012.
- Conferència especial (keynote). “On the hydromechanical behaviour of argillaceous hard soils – weak rocks”. XV European Conference on Soil Mechanics and Foundation Engineering. Athens, Greece. 2011
- Conferència especial plenària (keynote). “Hydromechanical modeling of multi-porosity clays”. 13th International Conference of the Association for Computer Methods and Advances in Geomechanics (IACMAG 2011). Melbourne, Australia. 2011.
- Conferència especial (keynote). “Mechanisms of progressive failure in brittle argillaceous materials. The failure of Aznalcóllar Dam. OGG Workshop on Computational Methods in Geomechanics – Failure Mechanisms and Parameter Identification. Österreichische Gesellschaft für Geomechanik. Salzburgo, Austria. 2011.
- Conferència especial (keynote). “Generalized plasticity model of geomaterials with double structure”. 11th International Conference on Computational Plasticity. COMPLAS XI. Barcelona, 2011.
- Conferència especial: “Analysis of underground excavations in clay rocks”. 2<sup>nd</sup> International Symposium on Computational Geomechanics (COMGEO II). Cavtat-Dubrovnik, Croàcia. 2011.

- Conferència plenària: “Environmental geotechnics and nuclear waste”. 6th International Congress on Environmental Geotechnics. Delhi, India, 2010.
- Reporter general de la sessió: “Urban Environmental Geotechnics”. International Geotechnical Conference on Geotechnical Challenges in Megacities. Moscú, Rússia, 2010.
- Conferència inaugural plenària. “Some issues in constitutive modelling of unsaturated soils”. 4th Asia-Pacific Conference on Unsaturated Soils. Newcastle, Australia. 2009.
- Conferència especial (keynote). “Modelling THMC Interactions for Nuclear Waste Disposal”. International Symposium on Unsaturated Soil Mechanics and Deep Geological Nuclear Waste Disposal. Shanghai, China. 2009.
- Conferència inaugural. “Fundamentals of Soil Behaviour”. XXII Torino Geotechnical Conference. Risk Mitigation by Soil Improvement and Reinforcement. Turín, Itàlia.
- Conferència especial (keynote). “Characterisation and modelling”. Géotechnique Symposium in Print on Thermal Behaviour of the ground. Institution of Civil Engineers, Londres, 2009.
- Conferència especial (keynote). “The failure of Aznalcóllar Dam”. Aktuelle Entwicklungen bei der Anwendung numerischer Verfahren in der Geotechnik. Workshop des DGGT Arbeitskreises 1.6: Numerik in der Geotechnik. Karlsruhe, Alemanya, 2009.
- Conferència especial. “Modelos, comportamiento y auscultación – una visión integrada”. Jornada Técnica AETOS: Singularidades constructivas en los túneles de los Metros de Barcelona, Madrid y Sevilla. Barcelona, 2009.
- Conferència especial (keynote). “Modelling the response of argillaceous rocks in underground excavations”. The 12th International Conference of International Association for Computer Methods and Advances in Geomechanics (IACMAG), Goa, India, 2008
- Conferència inaugural. “Geotechnical engineering in a deltaic environment: Civil engineering works in the Llobregat Delta, Barcelona”. European Conference on Engineering Geology, Madrid, 2008.
- Conferència convidada. “Contributions of publications in Géotechnique to theory”. Celebration of the Diamond Jubilee Anniversary of Géotechnique. Londres 2008.
- Conferència especial (keynote). “Coupled analysis of chemo-mechanical processes”. 3rd International Conference on Coupled THMC processes in Geo-Systems, Lille, França, 2008.
- Conferència convidada. “The failure of Aznalcóllar dam”. The 2007 International Forum on Landslide Disaster Management". Hong Kong, 2007.
- Conferència especial (keynote). “Analysis of expansive clay hydration using non-conventional models" 2nd International Conference on Mechanics of Unsaturated Soils. Weimar Alemanya. 2007.
- Discussion Leader. Sesión 5.1. “Settlement compensation by grouting in urban areas”. XIV European Conference on Soil Mechanics and Geotechnical Engineering. Madrid 2007.
- Conferència especial. “Analysis of chemo-mechanical interactions in argillaceous materials”. 10th International Symposium on Numerical Models in Geomechanics. Rodas, Grècia. 2007.



- Conferència especial. “Muros pantalla: movimientos producidos por la excavación”. Jornadas Técnicas SEMSIG-AETESS: Muros pantallas en ámbito urbano. Barcelona, 2007.
- Conferència especial (keynote). “Response of a saturated mudstone under excavation and thermal loading”. International Symposium of the International Society for Rock Mechanics, EUROCK 2006. Lieja, Bélgica, 2006.
- Discussion Leader. Sesión 6. “Fate and Transport of Pollutants”. 5th International Conference on Environmental Geotechnics (5th ICEG). Cardiff, Reino Unido. 2006.
- Conferència especial (keynote). “Coupled thermo-hydro-mechanical analysis of engineered barriers for high level radioactive waste”. International Symposium on Engineered Barriers for High Level Radioactive Waste disposal (ISEB 2005). Shanghai, China. 2005.
- Conferència especial (keynote). “Elastoplastic and damage modelling of hard soil and soft rocks: Formulation and Applications”. 8th International Conference on Computational Plasticity (COMPLAS VIII). Barcelona, 2006.
- Conferència especial. “On constitutive modelling of unsaturated soils”. International Workshop on Modern Trends in Geomechanics. Viena, Austria. 2005.
- Conferència especial (keynote). “On modelling coupled phenomena in porous media”. International Conference on Computational and Experimental Engineering and Sciences (ICCES’05). Chennai, India. 2005.
- Conferència especial (keynote). “Numerical modelling in nuclear waste storage engineering”, 11th International Conference on Computer Methods and Advances in Geomechanics (IACMAG). Turín, Italia. 2005.
- Conferència especial (keynote). “Coupled analysis in Geomechanics. From effective stress to THMC formulations”, XXV Iberian Latin American Congress on Computational Mechanics. Recife, Brasil. 2004.
- Conferència especial (keynote). “Aspects of modelling geotechnical problems in hard soils and soft argillaceous rocks”, 9th International Symposium on Numerical Models in Geomechanics NUMOG IX, Ottawa, Canadá. 2004
- Conferència especial (keynote), “Developments in understanding soil behaviour” (with R.J. Jardine, D.W. Hight & M. R. Coop). The Skempton Memorial Conference, Londres, 2004.
- Conferència especial. “The role of geotechnical engineering in nuclear energy utilisation”. XIII European Conference on Soil Mechanics and Geotechnical Engineering. Praga, República Checa, 2003
- Conferència especial (keynote). “Chemoplasticity Modelling of the hydro-mechanical behaviour of active clays”, 7th International Conference on Computational Plasticity (COMPLAS VII). Barcelona, 2003.
- Conferència inaugural. “Thermo-hydromechanical effects on the behaviour of clay barriers”, International Meeting on Clays in Natural and Engineered Barriers for radioactive waste confinement, Reims, Francia. 2002.
- Conferència especial (keynote). “Coupled chemomechanical analysis for saturated and unsaturated soils”, International Symposium on Environmental Geomechanics, Monte Verità, Ascona, Suiza, 2002.

- Conferència especial (keynote). “Analysis of the Hydration of bentonite seals and barriers in a deep radioactive waste repository”. 8th International Symposium on Numerical Models in Geomechanics, NUMOG VIII. Roma, Italia, 2002.
- Conferència especial (keynote). “Coupled thermo-hydro-mechanical analysis of saline materials. Application to radioactive waste containment”. European Congress on Computational Methods and Applied Sciences in Engineering. ECCOMAS 2000. Barcelona. 2000.
- Conferència especial (keynote). “The behaviour of unsaturated geomaterials: recent developments”. International Workshop on Geomechanics. Hydromechanical and Thermohydro-mechanical Behavior of Deep Argillaceous Rocks, Paris, Francia. 2000.
- Conferència especial. “Geotechnical Design and Construction of Breakwaters, Bilbao Harbour”. 12th European Conference on Soil Mechanics and Geotechnical Engineering. Amsterdam, Holanda, 1999.
- Conferència especial (keynote). “Coupled THM analysis of waste repositories in saline materials”. 5th US National Congress on Computational Mechanics. Boulder, Colorado, USA, 1999.
- Conferència especial (keynote). “Finite element analysis for the safety evaluation of a dam on fractured rock foundation”. International Symposium: Beyond 2000 in Computational Geotechnics. Amsterdam. Holanda. 1999.
- Conferència especial (keynote). “Thermo-hydro-mechanical analysis in Geomechanics. Formulation and applications”. 4th World Congress on Computational Mechanics. Buenos Aires, Argentina. 1998.
- Co-reporter general de la sessió: “Numerical modelling and information technology”. 11th European Conference on Soil Mechanics and Foundation Engineering. Copenhagen, Dinamarca, 1995.
- Conferència especial (keynote). “Constitutive modelling. Application to compacted soils”. 1st International Conference on Unsaturated Soils. Paris, Francia, 1995.
- Reporter general de la sessió: “Prediction, performance and design”. International Symposium on Prefailure deformation characteristics of geomaterials, Sapporo, Japón. 1994.
- Conferència especial (keynote). “Behaviour of unsaturated active clays”. Workshop on stress partitioning in engineered clay barriers. Duke University, Raleigh, North Carolina, USA, 1991.
- Conferència especial (keynote). “Prediction of ground movements in partially saturated soils”. 4th International Conference on Ground movements and structures. Cardiff, Reino Unido, 1991.
- Co-reporter General: “Special problem soils”. 9th European Conference on Soil Mechanics and Foundation Engineering. Dublín, Irlanda, 1987

## **Comités editorials**

- International Journal for Numerical and Analytical Methods in Geomechanics (Wiley)
- Computers and Geotechnics (Elsevier)
- International Journal of Geomechanics (ASCE)
- Geomechanics and Geoengineering (co-editor) (Taylor & Francis)
- Geotechnical and Geological Engineering (Springer)
- Revista Internacional de Métodos Numéricos en Ingeniería (Elsevier-UPC)
- Rivista Italiana di Geotecnica (AGI)
- Environmental Geotechnics (ICE, UK)
- Geomechanics for Energy and the Environment (Editorial Policy Advisor) (Elsevier).
- Géotechnique Advisory Panel (2012-2015)
- Géotechnique Working Group (2014-2016)
- Geotechnical Engineering (I.C.E., U.K.) 2000-2016

## **Societats científiques y técnicas**

- Membre de la Junta Directiva de la Societat Espanyola de Mecànica del Sòl i Enginyeria Geotècnica. Des de 2006.
- Membre del Board of Directors de l'European Network of Laboratories, ALERT: Geomaterials. Des de 1993 i 2010.
- Membre del Board of Directors of the European Network of Laboratories, GRECO: Rheologie des Geomateriaux. 1989-1993.
- Membre del Consell Assessor del Centre Internacional de Mètodes Numèrics en Enginyeria (CIMNE). 1991-2002.
- Membre del Comitè Executiu del Centre Internacional de Mètodes Numèrics en Enginyeria (CIMNE). 1988-1991 i des de 2002.
- Membre del Comitè Assessor de l'Institut Geològic i Miner d'Espanya (Spanish Geological Survey). 2003-2011.
- Membre del Comitè TC-5 i TC-215: "Environmental Geotechnics" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica (from 1999).
- Membre del Comitè TC-6 and TC-106: "Unsaturated Soils" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica (des de 2001). Core member de 2010-2013.
- Membre del Comitè TC-12: "Validation of Computer Simulations" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica (1990-1997).
- Membre del Comitè TC-32: "Engineering practice of risk assessment and management" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica (2001 - 2010).
- Membre del Comitè TC-34: "Prediction methods in large strain Geomechanics" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica (2001-2010).
- Membre del Comitè TC-35: "Geotechnics of the particulate mitjana" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica (Des de 2001).

- Membre del Comitè TC-103: "Numerical Methods in Geomechanics" de la Societat Internacional de Mecànica del Sòl i Enginyeria Geotècnica g (Des de 2010).
- Membre del Comité Científic Assessor del projecte Mechanical Behaviour of Partially and Multiphase Saturated Chalks (PASSACHALK) (1997-2000).
- Membre del Board of the International Association for Computer Methods and Advances in Geomechanics (IACMAG). From 2002.
- President de la Engineered Barrier Systems (EBS) Task Force. SKB and Aspö International Joint Committee. Des de 2004.
- Membre del Evolution Group 9 del Eurocodi sobre problemes associats amb la consideració de pressions d'aigua. Des de 2011.
- Task A Leader. DECOVALEX 2011 International Cooperative Project. 2008-2011.

### **Revisor y Examinador extern**

- European Science Foundation (ESF) College of Expert reviewers. des 2014
- Nominador per al 2015 Japan Prize
- Membre del Géotechnique Working Group. 2012-2015.
- Membre del Géotechnique Advisory Panel. 2011-2014.
- Examinador extern del grau de MEng Civil & Environmental Engineering. Imperial College, London. Des 2008/9 a 2011/12.
- Comissió d'Avaluació. Pla Nacional de Investigación I + D + I. 2007-2010.
- Expert del programa ACADEMIA d'avaluació per a la promoció de professors, Ministeri d'Educació. 2009-2012.
- Membre del Peer Review College for the Engineering and Physical Sciences Research Council (EPSRC), Regne Unit. 2005-2010.
- Assessor del Research Assessment Exercise 2001. Higher Education funding bodies, Regne Unit.
- Jurat per premis de la Institution of Civil Engineers (Regne Unit).
- Jurat per a premis de IACMAG (International Association for Computer Methods and Advances in Geomechanics).
- Jurat per al premi al major article. Journal: Geomechanics and Geoengineering
- Revisor per a projectes de recerca. Australian Research Council
- Revisor per a projectes de recerca. Research Grants Council, Hong Kong SAR
- Revisor per a projectes de recerca. National Science and Engineering Research Council (NSERC-CRSNG), Canadà.
- Revisor per a projectes de recerca. Foundation for Research Development (FRD), South Africa.
- Revisor per a avaluació d'investigadors. Fonds National de la Recherche Scientifique, Belgium.
- Revisor per a projectes de recerca. National Science Foundation, EUA.
- Revisor per a projectes de recerca. National Science Foundation, Suïssa.
- Membre del Panell d'Avaluació de projectes de recerca. National Science Foundation, EUA. 2004.

- Membre del Panell d'Avaluació de projectes de recerca. Fundação per a Ciència i a Tecnologia, Ministeri de Ciència i dóna Tecnologia, Portugal. 2002
- Membre de Tribunals d'Habilitació a França. Laboratoire Central des Pons et Chaussées, Paris, Université de Grenoble, École National des Ponts et Chaussées, França, Université de Lille.
- Examinador extern per al títol de D. Sc. University of Newcastle (Austràlia).
- Examinador extern per al títol de Ph..D. University of Wales, Cardiff., Imperial College, London, University of Sidney (Austràlia), University of Newcastle (Austràlia), École National des Ponts et Chaussées, Paris, École Centrale de Paris, Université d'Orléans (França). Université de Montpellier (França), Université Pierre and Marie Curie, Paris, Université de les Ciències i Technologies de Lille (França), Université Joseph Fourier, Grenoble (França), Institut National des Sciences Appliquées (INSA) de Rennes (França), University of Manitoba, Winnipeg (Canadà). Université de Liège (Bèlgica), Universität Stuttgart (Alemanya), Universität Bochum (Alemanya), EPFL, Lausanne (Suïssa), Universitat de la Corunya (Spain), Universitat Autònoma de Madrid.
- Revisor de llibres per Taylor & Francis, John Wiley & Sons i CRC Press.
- Revisor per a les següents revistes internacionals (seleccionades): Géotechnique, International Journal for Numerical Methods in Engineering, Engineering Computations, Canadian Geotechnical Journal, Engineering Geology, Journal of Geotechnical and Geoenvironmental Engineering (ASCE), Quarterly Journal of Engineering Geology, Rock Mechanics and rock Engineering, Physics and Chemistry of the Earth, Communications of Numerical Methods in Engineering, Soils and Foundations, ASTM Geotechnical Testing Journal, Journal of Hydrology, Transport in porous mitjana.

### **Professor visitante i conferències convidades**

- Professor visitant. Geotechnical Engineering Group. Department of Civil Engineering. Massachusetts Institute of Technology. Enero 1991-Marzo 1991.
- Professor visitant. Geotechnical Engineering Group. Department of Civil, Environmental and Surveying Engineering. University of Newcastle, Australia. Junio 1996- Agosto 1996.
- Professor visitant. EPSRC visiting Fellowship Research Grant. Imperial College, London. Diversas estancias en el período 1997-2000.
- Conferències convidades (seleccionades) a les Universitats de Cambridge, Oxford, Glasgow, Nottingham, Surrey, Newcastle (Reino Unido), Ecole National Ponts et Chaussées, Paris, Graz (Austria), Sidney, Newcastle, Melbourne, Perth, Hobart, Brisbane, Adelaide (Australia), Canterbury, Wellington, Auckland (Nueva Zelanda), Rio de Janeiro, Sao Paulo, Porto Alegre, Recife (Brazil), Santiago (Chile), Querétaro, UNAM (Mexico), U. de los Andes, Bogotá (Colombia), Laval, Winnipeg, Queen's, Ontario, (Canadá), ETH, Zurich, EPFL, Lausanne (Suiza), Politecnico di Torino, University of Naples, Universita Roma La Sapienza (Italia), Delft University of Technology (Holanda), Université de Liège (Bèlgica), MIT (US), Tonji University, Shanghai (China), University of Hong Kong.

## Publicacions seleccionades

Más de 400 publicacions en Revistes y Congressos nacionals e internacionals.

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Més de 200 cites: **8/9/16**

100-200 cites: **7/12/25**

Algunes publicacions seleccionades:

### *Articles*

- Ciantia, M.O., Arroyo, M., O'Sullivan, C., Gens, A., Liu T. (2019). Grading evolution and critical state in a discrete numerical model of Fontainebleau sand. *Geotechnique*, 69 (1), 1-15. doi.org/10.1680/jgeot.17.P.023
- Gens A. (2019). Clays in natural and engineered barriers for nuclear waste disposal. *Geomechanics for Energy and the Environment*, 17, 1-2. doi.org/10.1016/j.gete.2018.11.004
- Conesa, S., Mánica, M., Gens, A. Huang, Y. (2019). Numerical simulation of the undrained stability of slopes in anisotropic fine-grained soils. *Geomechanics and GeoEngineering: an International Journal*, 14 (1), 18-29. doi.org/10.1080/17486025.2018.1490460
- Finsterle, S., Lanyon, B., Åkesson, M., Baxter, S., Bergström, M., Bockgård, N., Dershowitz, W., Dessirier, B., Frampton, A., Fransson, Å, Gens, A., Gylling, B., Hančilová, I., Holton, D., Jarsjö, J., Kim, J.-S., Kröhn, K.-P., Malmberg, D., Pulkkanen, V. M., Sawada, A., Sjöland, A., Svensson, U., Vidstrand, P., Viswanathan, H. (2018). Multiple Roles of Clays in Radioactive Waste Confinement (Norris, S., Neeft, E.A.C. & Van Geet, M. eds), Geological Society, London, Special Publications, 482, doi.org/10.1144/SP482.12
- Di Mariano, A., Amoroso, S., Arroyo, M., Monaco, P., Gens A (2018). SDMT-Based Numerical Analyses of Deep Excavation in Soft Soil. *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 145 (1):04018102. doi: 10.1061/(ASCE)GT.1943-5606.0001993  
(*Editor's choice for ASCE SmartBrief*)
- Manica, M., Gens, A., Vaunat, J., Ruiz, D.F. (2018). Nonlocal plasticity modelling of strain localisation in stiff clays. *Computers and Geotechnics*, 103, 138–150. doi.org/10.1016/j.compgeo.2018.07.008
- Monforte, L., Arroyo, M., Carbonell, J.M., Gens, A. (2018). Coupled effective stress analysis of insertion problems in geotechnics with the Particle Finite Element Method. *Computers and Geotechnics*, 101, 114–129. doi.org/10.1016/j.compgeo.2018.04.002

- Gallipoli, D., Grassl, P., Wheeler, S., Gens, A. (2018). On the choice of stress–strain variables for unsaturated soils and its effect on plastic flow. *Geomechanics for Energy and the Environment*, 15, 3-9. doi.org/10.1016/j.gete.2018.02.002
- Butlanska, J., Arroyo, M., Amoroso, S., Gens, A. (2018). Marchetti Flat Dilatometer Tests in a Virtual Calibration Chamber. *Geotechnical Testing Journal*, 41 (5), 930-945, <https://doi.org/10.1520/GTJ20170370>
- Monforte, L., Carbonell, J.M., Arroyo, M., Gens, A. (2017). Performance of mixed formulations for the particle finite element method in soil mechanics problems. *Computational Particle Mechanics*, 4, 269-284. doi: 10.1007/s40571-016-0145-0.
- Manica, M., Gens, A., Vaunat, J., Ruiz, D.F. (2017). A time-dependent anisotropic model for argillaceous rocks. Application to an underground excavation in Callovo-Oxfordian claystone. *Computers and Geotechnics*, 85, 341-350. doi:10.1016/j.compgeo.2016.11.004
- Seyed, D.M., Gens, A. (2017). Numerical analysis of the hydromechanical response of Callovo-Oxfordian claystone to deep excavations. *Computers and Geotechnics*, 85, 75-76. doi: 10.1016/j.compgeo.2017.03.006
- Gens, A., Wieczorek, K., Gaus, I., Garitte, B., Mayor, J.C., Schuster, K., Armand, G., Garcia-Sineriz, J.L., Trick, T. (2017). Performance of the Opalinus Clay under thermal loading: experimental results from Mont Terri rock laboratory (Switzerland). *Swiss Journal of Geosciences*, 110, 269-286. doi: 10.1007/s00015-016-0258-8
- Monforte, L., Arroyo, M., Carbonell, J.M., Gens, A. (2017). Numerical simulation of undrained insertion problems in geotechnical engineering with the Particle Finite Element Method (PFEM). *Computers and Geotechnics*, 82, 144-156. doi:10.1016/j.compgeo.2016.08.013
- Sanchez, M., Gens, A., Villar, M.V., Olivella, S. (2016). Fully Coupled Thermo-Hydro-Mechanical Double-Porosity Formulation for Unsaturated Soils. *International Journal of Geomechanics*, 16 (6), D4016015, 1-17. doi:10.1061/(ASCE)GM.1943-5622.0000728
- Charlton, T.S., Rouainia, M., Gens, A. (2016). Numerical analysis of suction embedded plate anchors in structured clay. *Applied Ocean Research*, 61, 156-166. doi:10.1016/j.apor.2016.10.009
- Gens, A., Arroyo, M., Butlanska, J., Carbonell, J.M., Ciantia, M., Monforte, L., O’Sullivan, C. (2016). Simulation of the cone penetration test: discrete and continuum approaches. *Australian Geomechanics* 51(4), 169-182.
- Ciantia, M.O., Arroyo, M., Calvetti, F., Gens, A. (2016). A numerical investigation of the incremental behavior of crushable granular soils. *Int. J. Numer. Anal. Meth. Geomech.* 40, 1773–1798. doi: 10.1002/nag.2503
- Sanchez, M., Arson, C., Gens, A., Aponte, F. (2016). Analysis of unsaturated materials hydration incorporating the effect of thermo-osmotic flow. *Geomechanics for Energy and the Environment*. 6, 101-115. doi: 10.1016/j.gete.2016.05.001
- Mánica, M., Gens, A., Vaunat, J., Ruiz, D.F. (2016). A cross-anisotropic formulation for elasto-plastic models. *Geotechnique Letters* 6, 156-162. <http://dx.doi.org/10.1680/jgele.15.00182>

- Gonzalez, C., Arroyo, M., Gens, A. (2016). Thrust and torque components on mixed-face EPB drives. *Tunnelling and Underground Space Technology*. 57, 47-54. doi: 10.1016/j.tust.2016.01.037
- González, C., Arroyo, M., Gens, A. (2015). Wear and abrasivity: observations from EPB drives in mixed soft – rock sections. *Geomechanics and Tunnelling* 8, No. 3, 258-264. DOI: 10.1002/geot.201500007
- Ciantia, M.O., Arroyo, M., Calvetti, F. & Gens, A. (2015) An approach to enhance efficiency of DEM modelling of soils with crushable grains, *Geotechnique* 65, No. 2, 91–110. <http://dx.doi.org/10.1680/geot.13.P.218>
- Casini, F., Gens, A., Olivella, S. Viggiani, G.M.B. (2014). Artificial ground freezing of a volcanic ash: laboratory tests and modelling. *Environmental Geotechnics*, 1-14. <http://dx.doi.org/10.1680/envgeo.14.00004>
- Lloret-Cabot, M. Wheeler, S.J., Pineda, J.A., Sheng, D., Gens, A. (2014). Relative performance of two unsaturated soil models using different constitutive variables. *Canadian Geotechnical Journal*, 51(12), 1423-1437. DOI: 10.1139/cgj-2013-0462
- Garitte, B., Gens, A., Vaunat, J., Armand, G. (2014). Thermal conductivity of argillaceous rocks: Determination methodology using in situ heating tests. *Rock Mechanics and Rock Engineering*, 47 (1), 111-129.
- Climent, N., Arroyo, M., O’Sullivan, C., Gens, A. (2014). Sand production simulation coupling DEM with CFD. *European Journal of Environmental and Civil Engineering*, 18 (9), 983-1008.
- Indaratna, B., Premadasa, W., Brown, E.T., Gens A., Heitor, A. (2014). Shear strength of rock joints influenced by compacted infill. *Int. J. Rock Mechanics & Mining Sciences*, 70, 296-307.
- Butlanska J., Arroyo M., Gens A., O’Sullivan, C. (2014). Multi-scale analysis of cone penetration test (CPT) in a virtual calibration chamber. *Canadian Geotechnical Journal*, 51 (1), 51-66.
- Butlanska, J., Arroyo, M., Gens, A. (2013). Steady State of Solid-Grain Interfaces during Simulated CPT. *Studia Geotechnica et Mechanica*, Vol. 35(4). DOI: 10.2478/sgem-2013-0034.
- Gens, A., Valleján, B., Zandarín M-T., Sánchez M. (2013). Homogenization in clay barriers and seals: Two case studies. *Journal of Rock Mechanics and Geotechnical Engineering* 5, 191-199.
- Guimaraes, L. do N., Gens, A., Sánchez, M., Olivella, S. (2013). A chemo-mechanical constitutive model accounting for cation exchange in expansive clays. *Geotechnique* 63, (3), 221–234 [<http://dx.doi.org/10.1680/geot.SIP13.P.012>]
- Garitte, B., Gens, A., Vaunat, J., Armand, G. (2013). Thermal Conductivity of Argillaceous Rocks: Determination Methodology Using In Situ Heating Tests. *Rock Mech Rock Eng*. DOI 10.1007/s00603-012-0335-x
- Alonso, E.E., Pinyol, N.M., Gens A. (2013). Compacted soil behaviour: initial state, structure and constitutive modelling. *Geotechnique*, 63 (6), 463-478.
- Garitte, B., Bond, A., Millard A., Zhang, C., Mcdermotte, C., Nakamaf, S., Gens, A. (2013). Analysis of hydro-mechanical processes in a ventilated tunnel in an argillaceous



rock on the basis of different modelling approaches. *Journal of Rock Mechanics and Geotechnical Engineering* 5 (2013) 1–17

- Gonzalez, N.A., Rouainia, M., Arroyo, M., Gens, A. (2012). Analysis of tunnel excavation in London Clay incorporating soil structure. *Geotechnique*, 62 (12), 1095-1109.
- Sánchez, M., Gens, A., Guimaraes, L. (2012). Thermal–hydraulic–mechanical (THM) behaviour of a large-scale in situ heating experiment during cooling and dismantling. *Canadian Geotechnical Journal*, 2012, 49 (10): 1169–1195.  
(*Editor's choice, CGJ*)
- Sánchez, M., Gens, A., Olivella, S. (2012). “THM analysis of a large scale heating test incorporating material fabric changes” *International Journal Numerical and Analytical Methods in Geomechanics*, 36: 391-421.
- Arroyo, M., Ciantia, M., Castellanza, R., Gens, A., Nova, R. (2012). Simulation of cement-improved clay structures with a bonded elasto-plastic model: A practical approach. *Computers and Geotechnics*, 45, 140-150.
- Zhou, A.-N., Sheng, D., Sloan, S.W., Gens, A. (2012). Interpretation of unsaturated soil behaviour in the stress-saturation space, I: Volume change and water retention behaviour. *Computers and Geotechnics*, 43, 178-187.
- Zhou, A.-N., Sheng, D., Sloan, S.W., Gens, A. (2012). Interpretation of unsaturated soil behaviour in the stress saturation space II: Constitutive relationships and validations. *Computers and Geotechnics*, 43, 111-123
- Zandarin M.T., Gens A., Olivella S., Alonso E.E. (2011). Thermo-hydro-mechanical model of the Canister Retrieval Test. *J. Phys. Chem. Earth*, 36, 1806-1816.
- Gens, A., Valleján, B., Sánchez, M., Imbert, C., Villar, M.V., Van Geet, M. (2011). “Hydromechanical behaviour of a heterogeneous compacted soil: experimental observations and modelling”. *Geotechnique*, 61, 367-386.  
(*George Stephenson Medal, ICE, UK*)
- Arroyo, M., Butlanska, J., Gens, A., Calvetti, F., Jamiolkowski, M. (2011). “Cone penetration tests in a virtual calibration chamber”. *Géotechnique*. 61, 525-531.
- Gens, A., Guimarães, L. do N., Sánchez, M., Olivella, S. (2010). “Modelling thermo-hydro-mechano-chemical interactions for nuclear waste disposal”. *Journal of Rock Mechanics and Geotechnical Engineering*, 2, 97-102.
- Gens, A. (2010). “Soil-environment interactions in geotechnical engineering. 47th Rankine Lecture”. *Geotechnique*, 60, 3-74
- Gens A., Garitte, B., Olivella, S., Vaunat, J. (2009). “Application of multiphysical geomechanics un underground nuclear waste storage”. *European Journal of Environmental and Civil Engineering*, 13, No 7-8, 937-962
- Gens A., Sánchez, M., Guimarães, L. do N., Alonso, E.E., Lloret, A., Olivella, S., Villar, M.V., Huertas, F. (2009). “A full-scale in situ heating test for high-level nuclear waste disposal: observations, analysis and interpretation”. *Geotechnique*, 59, 377-399
- Nishimura, S., Gens A., Olivella, S., Jardine, R.J. (2009). “THM-coupled finite element analysis of frozen soil: formulation and application”. *Geotechnique*, 59, 159-171

- Berdugo, I.R., Alonso, E., Romero, E., Gens, A., Albis, M. (2009). "A review of expansive phenomena in Wagenbur North Tunnel". *Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales*, 33 (129), 456-468.
- Berdugo, I.R., Alonso, E., Romero, E., Gens, A. (2009). "Tunnelling and Swelling in Triassic Sulphate-Bearing Rocks. Part I. Case studies from Baden-Württemberg". *Épsilon*, 12, 13-37.
- Berdugo, I.R., Alonso, E., Romero, E., Gens, A. (2009). "Tunnelling and Swelling in Triassic Sulphate-Bearing Rocks. Part II. Case studies from Jura Mountains". *Épsilon*, 12, 39-53.
- Sheng, D., Gens, A., Fredlund D.G., Sloan, S.W. (2008). "Unsaturated soils: From constitutive modelling to numerical algorithms". *Computers and Geotechnics*, 35 (6), 810-824.
- Gallipoli, D., Gens, A., Chen, G., D'Onza F. (2008). "Modelling unsaturated soil behaviour during normal consolidation and at critical state". *Computers and Geotechnics*, 35 (6), 825-834.
- Sánchez, M., Gens, A., Guimarães, L., Olivella, S. (2008). "Implementation algorithm of a generalised plasticity model for swelling clays". *Computers and Geotechnics*, 35 (6), 860-871.
- Sheng, D., Fredlund, D.G., Gens, A. (2008). "A new modelling approach for unsaturated soils using independent stress variables". *Canadian Geotechnical Journal*, 45: 511-534.  
(2009 R.M. Quigley award, Canadian Geotechnical Society)
- Villar M.V., Sánchez, M., Gens, A. (2008). "Behaviour of a bentonite barrier in the laboratory: Experimental results up to 8 years and numerical simulation". *Physics and Chemistry of the Earth*, 33, S476-S485.
- Castellanos, E., Villar, M.V., Romero, E., Lloret, A., Gens, A. (2008). "Chemical impact on the hydro-mechanical behaviour of high-density FEBEX bentonite". *Physics and Chemistry of the Earth*, 33, S516-S526.
- A. Menin, V.A. Salomoni, R. Santagiuliana, L. Simoni, A. Gens, B.A. Schrefler (2008). "A mechanism contributing to subsidence above gas reservoirs". *International Journal for Computational Methods in Engineering Science & Mechanics*, 9(5), 270-287.
- Gens, A., Vaunat, J., Garitte, B. & Willeveau, Y. (2007). "In situ behaviour of a stiff layered clay subject to thermal loading: observations and interpretation". *Geotechnique*, 57, 207-228.  
(George Stephenson Medal, ICE, UK)
- Guimaraes, L. do N., Gens, A., Olivella, S. (2007). "Coupled thermo-hydro-mechanical and chemical analysis of expansive clay subjected to heating and hydration". *Transport in porous media*, 66: 341-372
- Van Geet, M.m Volckaert, G., Bastiens, W., Maes, N., Weetjens, E., Sillen, X., Vallejan, B., Gens, A. (2007). "Efficiency of a borehole seal by means of pre-compacted bentonite blocks". *Physics and Chemistry of the Earth*, 32, 123-134.
- Gens, A., Sánchez, M., Sheng, D. (2006). "On constitutive modelling of unsaturated soils". *Acta Geotechnica*, 1: 137-147.

- Guimaraes, L. do N., Gens, A., Sánchez, M., Olivella, S. (2006). “THM and reactive transport of expansive clay barrier”. *Communications in Numerical Methods in Engineering*, 22: 849-859
- Gens, A., Olivella, S. (2006). “Coupled Thermo-hydro-mechanical analysis of engineered barriers for high level radioactive waste”. *Chinese Journal of Rock Mechanics and Engineering*, 25: 670-680
- Alonso, E. E., Gens, A. (2006). “Aznaalcóllar dam failure. Part 1: Field observations and material properties”. *Geotechnique*, 56: 165–183.  
(*Telford Medal, ICE, UK*)
- Gens, A., Alonso, E. E., (2006). “Aznaalcóllar dam failure. Part 2: Stability conditions and failure mechanism”. *Geotechnique*, 56: 185–201  
(*Telford Medal, ICE, UK*)
- Alonso, E. E., Gens, A. (2006). “Aznaalcóllar dam failure. Part 3: Dynamics of the motion”. *Geotechnique*, 56: 203–210
- Gens, A., Guimaraes, L. do N., Olivella, S. (2005). “THMC coupling in partially saturated geomaterials”. *Revue européenne de génie civil*, 9: 747-765.
- Schrefler, B.A., Gens, A., Simoni, L. (2005). “New data about surface subsidence above gas reservoirs”. *Revue européenne de génie civil*, 9: 817-825.
- Vaunat, J., A., Gens, A. (2005). “Analysis of the hydration of a bentonite seal in a deep radioactive waste repository”. *Engineering Geology*, 81: 317-328.
- Sánchez, M., Gens, A., Guimaraes, L. do N., Olivella, S (2005). “A double generalized plasticity model for expansive materials”. *International Journal for Numerical and Analytical Methods in Geomechanics*, 29: 751-787.
- Olivella, S., Gens A. (2005). “Double structure THM analysis of a heating test in a fractured tuff incorporating intrinsic permeability variations”. *International Journal of Rock Mechanics and Mining Sciences*, 42: 667-679.
- Rutqvist J., Barr D., Datta R., Gens A., Millard, A., Olivella S., Tsang C.-F., Tsang Y. (2005). “Coupled thermal–hydrological–mechanical analyses of the Yucca Mountain Drift Scale Test—Comparison of field measurements to predictions of four different numerical models”. *International Journal of Rock Mechanics and Mining Sciences*, 42: 680-697.  
(*Rock Mechanics Case History Award. American Rock Mechanics Association*)
- Mata, C., Guimaraes, L. do N., Ledesma, A., Gens, A., Olivella, S. (2005). “A hydro-geochemical analysis of the saturation process with salt water of a bentonite crushed granite rock mixture in an engineered nuclear barrier”. *Engineering Geology*, 81: 227-245.
- Sheng, D., Sloan, S. W., Gens A. (2004). “Constitutive model for unsaturated soils: thermomechanical and computational aspects”. *Computational Mechanics*, 33: 453-465
- Alonso, E.E., Gens, A., Delahaye, C. (2003). “Influence of rainfall on the deformation and stability of a slope in overconsolidated clays: a case study”. *Hidrogeology Journal*, 11: 174-192.
- Gallipoli, D., Gens, A., Sharma, R., Vaunat, J. (2003). “An elasto-plastic model for unsaturated soil incorporating the effects of suction and degree of saturation on mechanical behaviour”. *Géotechnique*, 53, 123-135

- Romero, E., Gens, A., Lloret, A. (2003). "Suction effects on a compacted clay under non-isothermal conditions". *Géotechnique*, 53, 65-81
- Lloret, A., Villar, M.V., Sanchez, M., Gens, A., Pintado, X., Alonso, E.E. (2003). "Mechanical behaviour of a heavily compacted bentonite under high suction changes". *Géotechnique*, 53, 27-40
- Sheng, D., Sloan, S.W., Gens, A., Smith, D.W. (2003). "Finite element formulation and algorithms for unsaturated soil. Part I: Theory". *International Journal for Numerical and Analytical Methods in Geomechanics*, 27: 745-765.
- Sheng, D., Smith, D.W., Sloan, S.W., Gens, A. (2003). "Finite element formulation and algorithms for unsaturated soil. Part II: Verification and application". *International Journal for Numerical and Analytical Methods in Geomechanics*, 27: 767-790.
- Musso, G., Romero, E., Gens, A., Castellanos, E. (2003). "The role of structure in the chemically induced deformations of FEBEX bentonite". *Applied Clay Science*, 23, 229-237
- Olivella, S., Gens, A. (2002). "A constitutive model for crushed salt". *International Journal for Numerical and Analytical Methods in Geomechanics*, 26: 719-746.
- Gens, A., Guimaraes L. Do N., Garcia-Molina, A., Alonso, E.E. (2002). "Factors controlling rock-clay buffer interaction in a radioactive waste repository". *Engineering Geology*, 64: 297-308.
- Pestana, J.M., Whittle, A.W., Gens, A. (2002). "Evaluation of a constitutive model for clays and sands: Part II – clay behaviour". *International Journal for Numerical and Analytical Methods in Geomechanics*, 26: 1123-1146.
- Guimaraes, L. do N., Gens, A., Olivella, S. (2002). "Investigation of damage formation around wellbores using reactive transport modelling". *Geochimica et Cosmochimica Acta*, 66: 187-189.
- Romero, E., Gens, A., Lloret, A. (2001). "Temperature effects on the hydraulic behaviour of an unsaturated clay". *Geotechnical and Geological Engineering*, 19:311-332
- Gens, A., Olivella, S. (2001). "THM phenomena in saturated and unsaturated porous media". *Revue française de génie civil*, 5: 693-717.
- Gens, A., Olivella, S. (2001). "Clay barriers in radioactive waste disposal". *Revue française de génie civil*, 5: 845-856.
- Alonso, E.E., Gens, A., Lloret, A. (2000). "Precompression design for secondary settlement reduction". *Géotechnique*, 50: 645-656
- Olivella, S., Gens, A. (2000). "Vapour transport in low permeability unsaturated soils with capillary effects". *Transport in Porous Media*, 40:219-241.
- Vaunat, J., Cante, J.C., Ledesma, A., Gens, A. (2000). "A stress point algorithm for an elastoplastic model in unsaturated soils". *International Journal of Plasticity*, 16: 121-141.
- Romero, E., Gens, A., Lloret, A. (1999). "Water permeability, water retention and microstructure of unsaturated compacted Boom clay" *Engineering Geology*, 54: 117-127.
- Alonso, E.E., Vaunat, J. & Gens, A. (1999). Modelling the mechanical behaviour of expansive clays. *Engineering Geology*, 54: 173-83.

- Gens, A., Garcia-Molina, A.J., Olivella, S., Alonso, E.E., Huertas, F. (1998). "Analysis of a full scale in situ test simulating repository conditions". *International Journal for Numerical and Analytical Methods in Geomechanics*, 22: 515-548.
- Gens, A., Alonso, E.E., Delage, P. (1997). "Computer modelling and applications to unsaturated soils". *Unsaturated Soil Engineering Practice*, Geotechnical Special Publication No. 68, ASCE, New York: 299-330.
- Ledesma, A., Gens, A. and Alonso, E.E. (1996). "Parameter and variance estimation in geotechnical backanalysis using prior information". *International Journal for Numerical and Analytical Methods in Geomechanics*, 20: 119-141.
- Ledesma, A., Gens, A. and Alonso, E.E. (1996). "Estimation of parameters in geotechnical backanalysis. I. Maximum likelihood approach". *Computers and Geotechnics*, 18: 1-27.
- Gens, A., Ledesma, A. and Alonso, E.E. (1996). "Estimation of parameters in geotechnical backanalysis. II. Application to a tunnel excavation problem". *Computers and Geotechnics*, 18: 29-46.
- Olivella, S., Carrera, J., Gens, A. and Alonso, E.E. (1996). "Porosity variations in saline media caused by temperature gradients coupled to multiphase flow and dissolution/precipitation" *Transport in porous media*, 25: 1-25.
- Olivella, S., Gens, A., Carrera, J., and Alonso, E.E. (1996). "Numerical formulation for a simulator (CODE-BRIGHT) for the coupled analysis of saline media" *Engineering Computations*, 13:87-112.
- Gens, A. (1995). "Constitutive modelling. Application to compacted soils". *Unsaturated soils* (E.E. Alonso, P. Delage, eds.), A.A. Balkema, Rotterdam, 3: 1179-1200.
- Olivella, S., Carrera, J., Gens, A., and Alonso, E.E. (1996). "Non-isothermal Multiphase Flow of Brine and Gas through Saline media", 13:87-112. *Transport in porous media*, 15: 271-293.
- Alonso, E.E., Gens, A. and Lloret, A. (1993). "The landslide of Cortes de Pallás. A case study. *Geotechnique*. 43: 507-521.  
(*Telford Medal, ICE, UK*)
- Gens, A. and Nova, R. (1993). "Conceptual bases for a constitutive model for bonded soils and weak rocks". *Geotechnical Engineering of Hard Soils-Soft Rocks* (Anagnostopoulos, A., Schlosser, F., Kaltefleiter, N., and Frank, R. ed.). A.A. Balkema, Rotterdam. 1:485-494.
- Gens, A. and Alonso, E.E (1992). "A framework for the behaviour of unsaturated expansive soils" *Canadian Geotechnical Journal*. 29: 1013-1032.
- Alonso, E.E., Gens, A. and Josa, A. (1990). "A constitutive model for partially saturated soils" *Géotechnique*. 40: 405-430.
- Gens, A., Carol, I. and Alonso, E.E. (1990). "A constitutive model for rock joints. Formulation and numerical implementation" *Computers and Geotechnics*. 9: 3-20.
- Gens, A., Hutchinson, J.N. and Cavounidis, S. (1988). "Three dimensional analysis of slides in cohesive soils". *Géotechnique*. 38:1-23.
- Symes, M.J., Gens, A. and Hight, D.W. (1988). "Drained principal stress rotation in saturated sand". *Géotechnique*. 38:59-81.

- Gens, A. and Potts, D.M. (1988). “Critical State Models in Computational Geomechanics”. *Engineering Computations*. 5:178-197.
- Gens, A., Carol, I. and Alonso, E.E. (1988). “An interface element for the analysis of soil-reinforcement interaction”. *Computers and Geotechnics*. 7:133-151.
- Alonso, E.E., Gens, A., Hight, D.W. (1987). “Special problem soils”. General Report: Session 5. Groundwater effects in Geotechnical Engineering. (E.T. Hanrahan, T.L.L. Orr and T.F. Widdis, ed.). A.A. Balkema. Rotterdam. 3:1087-1146.
- Potts, D.M. and Gens, A. (1985). “A critical assessment of methods for correcting for drift from the yield surface in elasto-plastic finite element analysis”. *International Journal for Numerical and Analytical Methods in Geomechanics*. 9:149-159.
- Symes, M.J., Gens, A. and Hight, D.W. (1984). “Undrained anisotropy and principal stress rotation in saturated sand”. *Géotechnique*. 34:11-27.
- Gens, A. and Potts, D.M. (1984). “Formulation of quasi-axisymmetric boundary value problems for finite element analysis”. *Engineering Computations*. 1:144-150.
- Potts, D.M. and Gens, A. (1984). “The effect of plastic potential in boundary value problems involving plane strain deformation”. *International Journal for Numerical and Analytical Methods in Geomechanics*. 8:259-286.
- Hight, D.W., Gens, A. and Symes, M.J. (1983). “The development of a new hollow cylinder apparatus for investigating the effect of principal stress rotation in soils”. *Géotechnique*. 33:355-383.

#### *Capítuls de llibres*

- Gens, A., Alonso, E.E., Casanovas, J., Uzcanga, L. (2013). “The Buen Pastor Cathedral in San Sebastian”. *Geotechnics and Heritage* (Bilotta, E, Flora, A., Lirer, S., Viggiani, C. eds.), CRC Press, Taylor & Francis Group, Boca Raton: 179-193.
- Gens, A., Guimaraes, L. do N., Sánchez, M., Vallejan, B. (2011). “Coupled analysis of double porosity swelling clays”. *Multiscale and Multiphysics Processes in Geomechanics*, SSGG (Borja, R.I., ed.), Springer-Verlag, Berlin: 85-88.
- Gens, A. (2010). “Mechanics of unsaturated geomaterials applied to nuclear waste storage”. Chapter 12. *Mechanics of Unsaturated Geomaterials* (Laloui, L., ed.). 279-302.
- Nagel, F., Stascheit, J., Meschke, G., Gens, A., Rodic, T. (2010). Process-oriented numerical simulation of mechanised tunnelling. Chapter 6. *Technology Innovation in Underground Construction* (Beer, G., ed.). 87-127.
- Gens, A., Casanovas, J., Alonso, E.E., Uzcanga, L. (2005). “Proyecto y construcción de una excavación adyacente a la catedral del Buen Pastor en San Sebastián”. Capítulo 13, *Ingeniería del Terreno 5*, 359-370.
- Gens, A., Olivella, S. (2001). “Numerical analysos for radioactive waste disposal”. *Environmental Geomechanics*. (B.A. Schrefler, ed.), Springer-Verlag, Wien: 203-234.
- Gens, A., Ledesma, A. (2000). Capítulo 4. “Análisis inverso e identificación de parámetros en Geotecnia”. Libro homenaje a José Antonio Jiménez Salas, *Sociedad Española de Mecánica del Suelo e Ingeniería Geotécnica*, 27-41.

- Gens, A. (1995). “Constitutive laws” Chapter 2. Modern issues in non-saturated soils. (A. Gens, P. Jouanna, B.A. Schrefler, eds.), Springer-Verlag, Wien: 129-158.
- Gens, A., Carol, I., Alonso, E.E. (1995). “Rock Joints: FEM Implementation and Applications”. Chapter 17. Mechanics of Geomaterials Interfaces (A.P.S. Selvadurai, M.J. Boulon, eds.), Studies in Applied Mechanics 42, Elsevier, Amsterdam. 395-420.
- Gens, A., Ledesma, A. y Alonso, E.E. (1989). “Identificación de parámetros en Geomecánica”. Capítulo 1. Sistemas en la Ingeniería Civil (J. Rodellar, ed.). CIMNE. Barcelona. 1-47.
- Alonso, E.E. y Gens, A. (1989). “Interacción medidas de campo-análisis numéricos”. Capítulo 4. Instrumentación de obras (E.E. Alonso and A. Gens, ed.). Edicions de la Universitat Politècnica de Catalunya. 89-150.
- Gens, A. (1989). “Instrumentación de pilotes”. Capítulo 17. Instrumentación de obras (E.E. Alonso and A. Gens, ed.). Edicions de la Universitat Politècnica de Catalunya. 489-513.
- Gens, A. (1989). “Corrección de taludes inestables”. Capítulo 8. Estabilidad de taludes y laderas naturales (J. Corominas, ed.) Sociedad Española de Geomorfología. Zaragoza. 231-248.
- Hight, D.W., Jardine, R.J. and Gens, A. (1987). “The behaviour of soft clays”. Chapter 2. Embankments on soft clays. Public Works Research Center. Athens. 33-158
- Hight, D.W., Gens, A. and Jardine, R.J. (1985). “Evaluation of geotechnical parameters from triaxial tests on off-shore clays”. Chapter 16. Advances in Underwater Technology and Offshore Engineering 3. Graham and Trotman. London. 253-268.

*Edició de llibres i numeros especials de revistes*

- 2016. Special issue: “Numerical analysis of the hydromechanical response of Callovo-Oxfordian claystone in deep excavations” Computers and Geotechnics. Elsevier. ISSN: 0266-352X.
- 2014. Proceedings of the 23rd European Young Geotechnical Engineers Conference. M. Arroyo, A. Gens, eds. UPC. ISBN-10: 84-697-1036-2.
- 2011. Unsaturated Soils. E.E. Alonso, A. Gens. Taylor & Francis Group, London. ISBN 978-0-415-60428-4 (2 volumes), 978-0-203-83401-5 (eBook).
- 2008. Special issue: “Unsaturated soils: Models, algorithms and applications”. Computers and Geotechnics, 35 (6). Elsevier. ISSN: 0266-352X. 809-915.
- 2002. Special issue: “Key issues in waste isolation research”. Engineering Geology, 64 (2-3). Elsevier. ISSN: 0013-7952. 89-316.
- 2001. Environmental Geomechanics. R. Charlier, Gens, A., eds. Hermes Science Publications, Paris. ISBN 2-7462-0338-8. 236 páginas.
- 1995. Modern issues in non-saturated soils. A. Gens, P. Jouanna, B.A. Schrefler, eds. Springer-Verlag, Wien New York. 1995. ISBN 3-211-82783-8. 504 páginas
- 1990. Caracterización del terreno mediante técnicas de identificación de sistemas. A. Gens, A. Ledesma, E. Alonso. ETS Ingenieros de Caminos. Barcelona. ISBN 84-404-7470-9. 248 páginas.

- 1989. Instrumentación de obras. E.E. Alonso A. Gens, eds. Ediciones UPC. Barcelona. ISBN 84-7653-015-0. 646 páginas.
- 1986. Comportamiento mecánico de juntas y macizos rocosos. Análisis de la cimentación de la presa bóveda de Canelles. Alonso, E.E., Carol, I., Gens, A. ETS Ingenieros de Caminos. Barcelona. ISBN 84-398-82 52-1. 156 páginas.
- 1986. Aplicaciones del método de los elementos finitos: Ingeniería Geotécnica. E.E. Alonso, A. Gens, E. Oñate, eds. Ediciones UPC. Barcelona. 1986. ISBN 84-7653-011-0. 333 páginas.



## Projectes de recerca finançats

*(més de 4.0M euros en total)*

- Bentonite Mechanical Evolution. BEACON. EURATOM FISSION 2017-2021, topic NFRP 6: Addressing key priority R&I issues for the first-of-the-kind geological repositories. Grant Agreement (GA) No: 745942 European Union Commission. 2017-2021.
- Inestabilidad hidromecanica en suelos: detección y evaluación. INHISDE. BIA2017-84752-R. Ministerio de Economía, Industria y Competitividad. 2018-2020..
- Developing performance-based design for foundation systems of WIND turbines in AFRICA (WindAfrica). Engineering and Physical Sciences Research Council, UK (EP/P029434/1). 2017-2020.
- Simulación avanzada para optimizar el reconocimiento geotécnico submarino. SIMGESUB. BIA2014-59467-R. Ministerio de Economía y Competitividad. 2015-2018.
- Mechanics of Hard Soils and Soft Rocks. ARC Discovery Grant DP150103396. Australian Research Council. Partner Investigator.
- Numerical modelling of artificial ground freezing (NuMAGF). FP7-PEOPLE-2010 IEF: Marie Curie Action. European Union Commission. 2012-2014.
- Conminución granular y resistencia en la interfaz. Aplicación a pilotes offshore. (BIA2011-27217). Ministerio de Educación. 2011-2014.
- Fission-2009-1.1.1: Long-term performance of Engineered Barrier Systems (PEBS). European Union Commission (Grant agreement 249681). 2010-2014.
- Modelización avanzada de tratamientos del terreno por erosión y mezcla. (BIA2008-06537). Ministerio de Educación. 2009-2011.
- Coupled thermal-hydrological-mechanical-chemical (THMC) processes for application in repository safety assessment (THERESA). (FP6-036458). European Union Commission. 2007-2010.
- Thermal Impact on the Damaged Zone around a Radioactive Waste Disposal in Clay Host Rocks (TIMODAZ) (FP6-036449). European Union Commission. 2006-2010.
- Micro-Measurement and Monitoring System for Ageing Underground Structures. European Science Foundation Eurocores project. 2006-2010.
- Engineered Barrier System (EBS) Task Force. Chairmanship. SKB (Agencia sueca de residuos radioactivos). Desde 2004
- Thermo-hydro-mechanical behaviour of saturated and unsaturated Boom clay. Experimental and constitutive study. ESV EURIDICE GIE (European Underground Research Infrastructure for Disposal of Nuclear Waste in Clay Environment), Agencia belga de residuos radioactivos. 2005-2008.
- Interpretación avanzada de ensayos geotécnicos in situ. Aplicación a suelos no saturados y estructurados. (BIA2005-05801). Ministerio de Educación y Ciencia. 2005-2008.
- Integrated project on Technology Innovation in Underground construction (TUNCONSTRUCT) (NMP2-CT-2005-011817). European Union Commission. 2004-2008.
- Mechanics of Unsaturated Soils for Engineering (MUSE) (MRTN-CT-2004-506861). European Union Commission. 2004-2008.

- Understanding and physical and numerical modelling of the key processes in the near field, and their coupling, for different host rocks and repository strategies (NF-PRO) (FI6W-CT-2003-02389). European Union Commission y ENRESA (Agencia española de residuos radioactivos). 2004-2007.
- Coupled THMC formulations. Development and applications to environmental geotechnics and petroleum engineering. Spain-Brazil project. Ministerio de Educación y Ciencia. 2004-2005.
- Evaluation of the thermohydronechanical behaviour in and around storage cells for waste C and used fuel CU. HAVL Project. ANDRA (Agencia francesa de residuos radioactivos). 2004-2007.
- Actividades geotécnicas e hidrogeológicas en relación con la Línea 9. GISA. 2003-2007.
- Thermohydronechanical Modelling of the TER Mock Up Experiment at Mont-Terri (Switzerland). Mont Terri Consortium. ANDRA. 2003-2006.
- Development of constitutive laws for unsaturated and cemented soils. Alban Project. European Union Commission. 2003-2006.
- Flow and transport modelling of a storage facility at centre de l'Aube gravel facility case. ANDRA. 2003-2005.
- THM modelling of a seal of expansive clay with thin slots. HAVL Project. ANDRA. 2003-2006.
- Fractura hidráulica y otros fenómenos acoplados en discontinuidades geomecánicas (BTE2001-2227). Ministerio de Ciencia y Tecnología. 2001-2004.
- Unsaturated Soils and Numerical Application to Pressuremeter Testing. (HPMF-CT1999-00302). European Union Commission. 2000-2002.
- A large scale in situ demonstration test for repository sealing in an argillaceous host rock - phase II (RESEAL II). (FIS-5-1999-00101). European Union Commission. 2000-2003.
- Decovalex III Project. Task 2: The Yucca Mountain – Drift Scale Test. ENRESA. 2000-2003.
- Elaboration of hydronechanical coupled models by interpretation of the disturbances observed during the sinking of the main shaft of an underground laboratory in Eastern France (FIKW-CT-2000-00029). European Union Commission. 2000-2003.
- Full Scale Engineered Barriers Experiment in Crystalline Host Rock Phase II (FIKW-CT-2000-00016). European Union Commission y ENRESA. 2000-2003.
- Modelling the THM behaviour of engineered barriers including gap, corrosion and gas generation and transport. ANDRA. 1999-2000.
- Heater experiment: rock bentonite thermo-hydro-mechanical processes in the near field. Mont Terri Consortium. 1999-2003.
- Modelling flow in a surface storage facility (AUBE). ANDRA. 1999-2000.
- TSX, Tunnel in situ sealing Experiment. 2<sup>nd</sup> Phase. ANDRA. 1999-2000.
- Generation and transport of gas in bentonite (GASBEN). ENRESA. 1997-1998.
- Modelling the THM behaviour of engineered barriers (C Waste Canisters, C Waste Canisters, Spent Fuel Canisters). ANDRA. 1997-1999.
- A large scale in-situ demonstration test for repository sealing in an argillaceous host rock (RESEAL). Nuclear Fission Safety Programme (FI4W-CT95-0025). European Union Commission and ENRESA. 1996-1999.

- Análisis acoplados THMC (termo-hidro-mecánicos y químicos) considerando precipitación de solutos, cementación y fisuración. CICYT. 1996-1999.
- Calculation and testing of behaviour of unsaturated clay (CATSIUS CLAY). Nuclear Fission Safety Programme (FI4W-CT95-0003). European Union Commission. 1996-1999.
- Backfill Behaviour in Emplacement Drifts and Borehole in a Salt Repository (BBDB). Nuclear Fission Safety Programme (FI4W-CT95-0009). European Union Commission. 1996-1999.
- TSX, Tunnel in situ sealing Experiment. ANDRA. 1996-1997.
- Full scale engineered barriers experiment in crystalline host rock, FEBEX (FI4W-CT95-0006). European Union Commission y ENRESA. 1995-1999.
- Framework research program on geotechnical aspects related to radioactive waste disposal in deep geological formations. ENRESA. 1995-1999.
- A parallel computing solution of the simulation of waste disposal problems and contaminant transport in the ground for the use on an expert system for safety monitoring (PARCOMPWASTE). COPERNICUS Programme (CP94-0009). European Union Commission. 1995-1998.
- European validation exercise of gas migration model. RAD-WAS Programme (FI2W-CT93-0125). European Union Commission. 1994-1996.
- Research Fellowship. Human Capital and Mobility Program (ERBCHBI-CT94-1369). European Union Commission. 1994-1996.
- Fenómenos de daño y localización en materiales cuasi-frágiles y su modelización numérica. CICYT. 1993-1996.
- ALERT: Geomaterials Network. Human Capital and Mobility Program (CHRX-CT93-0217). European Union Commission. 1993-1996.
- A study of the performance of clay materials as engineered barriers for the storage and disposal of waste products (WASCLAYBARS). PECO Programme (CT92-4007). European Union Commission. 1993-1996.
- Modelling and testing of hydration of clay, backfilling and sealing materials. RAD-WAS Programme (FI2W-CT90-0033). European Community Commission. 1991-1994.
- Physical processes in the Mediterranean climates and related slope instabilities in overconsolidated clayey soils. Epoch Programme (EPOC-CT91-0034). European Community Commission. 1991-1993.
- Beca de infraestructura (GR90-0200). CICYT. US\$80,000. 1990.
- Desarrollo de métodos avanzados para el estudio de la seguridad de excavaciones subterráneas. OCIDE (PIE 135024). 1988-1992.
- Caracterización del terreno por métodos de identificación de sistemas. CICYT. 1987-1990.
- Numerical modelling of rock laboratory experiments. BP International. 1986-1987.

## Tesis Doctorals dirigides

- Alberto Ledesma Villaba. 1987 (Ph.D. prize)  
Identificación de parámetros en geotecnia. Aplicación a la excavación de túneles  
(Identification of parameters in geotechnics. Application to tunnel excavation)
- Alfredo Raúl Balmaceda. 1990.  
Suelos compactados. Un estudio teórico y experimental. (Compacted soils. A theoretical and experimental study)
- Sebastià Olivella. 1995.  
Non isothermal multiphase flow of brine and gas through saline media.
- Angel García Molina. 1998.  
Coupled thermo-hydro-mechanical analysis in Geomechanics.
- Enrique Romero. 1999. (Ph. D. Prize)  
Estudio teórico experimental de los efectos de succión y temperatura en suelos no saturados. (Theoretical and experimental study of the effects of suction and temperature on unsaturated soils).
- Leonardo do Nascimento Guimaraes. 2002.  
Análisis multi-componente no isoterma en medio porosa deformable no saturado. (Multi-component non isothermal analysis in unsaturated deformable porous media).
- Marcelo Javier Sánchez. 2004 (Ph.D. Prize)  
Thermo-hydro-mechanical coupled analysis in low permeability media
- Carlos Buenfil. 2011.  
Caracterización experimental del comportamiento mecánico de suelos no saturados  
(Experimental characterization of the mechanical behaviour of unsaturated soils).
- Analice F. Lima. 2011.  
Thermohydromechanical behaviour of two deep belgian clay formations: Boom and Ypresian clays
- Nubia González. 2011.  
Development of a family of constitutive models for geotechnical applications
- Zhan Zhifong. 2012.  
Numerical modeling of delayed and progressive failure in stiff clays with two-stage softening behaviour
- Joanna Butlanska. 2014.  
Cone penetration tests in a virtual calibration chamber
- Claudia González. 2014.  
Rendimiento, desgaste y abrasividad en excavación mecanizada de túneles en terrenos heterogéneos (Performance, wear and abrasivity in mechanical excavation of tunnels in heterogenous materials)
- Cristian de Santos. 2015.  
Backanalysis Methodology Based on Multiple Optimization Techniques for Geotechnical Problems
- Natalia Climent. 2016  
A coupled CFD-DEM Model for Sand Production in Oil Wells.
- Yanxin Mao. 2018  
Study of ice content and hydro-mechanical behaviour of frozen soils
- Miguel Mánica. 2018  
Analysis of underground excavations in argillaceous hard soils – weak rocks
- Lluís Monforte. 2018

## Insertion problems in Geomechanics with the Particle Finite Element Method

- Beatriz Valleján (in progress)  
Numerical modelling of the hydromechanical behaviour of FoCa clay powder and pellets mixtures.
- Ramón Barboza de Vasconcelos (in progress)  
Comportamiento hidromecánico y termohidromecánico de una arcilla a gran profundidad (Hydromechanical and thermohydromechanical behaviour of a clay at great depth).
- María Teresa Yubero (in progress)  
Estudio de la ejecución mecánica de túneles en el entorno de Barcelona. El caso de la línea 9. (Study of mechanized tunnelling in Barcelona. The Line 9 case).
- Dani Tarragó (in progress)  
Hydraulic fill liquefaction. Effect on quay stability
- Daniel Ruiz Restrepo (in progress)  
Modelación de fenómenos acoplados en el sellado de excavaciones profundas en roca arcillosa (Modelling coupled phenomena in the sealing of deep excavations in argillaceous rock)
- Ricardo Madrid (in progress)  
Short and long term performance of vertical breakwater on soft soils
- Saeed Torchi (in progress)  
Analysis of disposal concepts for high-level nuclear waste
- Lu He (in progress)  
Bentonite homogenization in seals and engineered barriers
- Eduard Puig (in progress)  
Micromechanics of three-phase granular materials

## Afiliacions

- Colegio de Ingenieros de Caminos, Canales y Puertos
- International Society for Soil Mechanics and Geotechnical Engineering.
- Sociedad Española de Mecánica del Suelo e Ingeniería Geotécnica
- British Geotechnical Association.
- International Society for Rock Mechanics
- International Association of Engineering Geology
- International Association for Computer Methods and Advances in Geomechanics.
- International Association for Computational Mechanics
- European Community on Computational Mechanics in Applied Sciences
- Member of Convocation, University of London.
- The Royal Institution, London (hasta 1996).
- Sociedad Española de Métodos Numéricos en Ingeniería
- Sociedad Española de Mecánica de Rocas
- Asociación Española de Geología Aplicada a la Ingeniería
- South East Asian Geotechnical Society

## Activitat professional

El professor Antonio Gens ha estat intensament implicat en activitats de consultoria geotècnica en relació amb destacades obres d'enginyeria. Ha participat en més de 100 projectes, a Espanya i a l'estranger, que inclouen túnels, excavacions profundes, dics i molls portuaris, preses de formigó i de terra, preses de residus miners, centrals tèrmiques i nuclears, aeroports, dipòsits de residus radioactius, grans instal·lacions científiques, fonaments superficials i profunds (a terra i offshore), millora del terreny, estabilitat de vessants, recalçament de estructures i reconeixement del terreny. Antonio Gens és també un Associate del Geotechnical Consulting Group (GCG) de Londres des de 1983.

Alguns treballs seleccionats:

- Membre del Design Review Board per a la presa de Bisri (Líban). Des de 2018
- Membre del Panell d'experts independents per a la revisió de les normes de risc i mesures de control en treballs de túnels. Building Construction Authority. Singapur. Des de 2018.
- Expert Geotècnic Independent per a la International Court of Arbitration sobre l'Aeroport Internacional de Muscat (Oman). 2016-2018.
- Expert Geotècnic Independent per a la International Court of Arbitration sobre el disseny i construcció de l'Al Faw Grand Port (Iraq). Des de 2016
- Consultor geotècnic per a la Línia 2 del metro de Lima (Perú). Des de 2018.
- Consultor geotècnic per a Navi Mumbai International Airport (Índia). Since 2016.
- Consultor geotècnic per a l'Autoritat Portuària de Barcelona. Des de 2007.
- Revisor Geotècnic del Projecte del Port de Nador West Med (Marroc). 2014-2015.
- Membre del Comitè d'experts per a la gestió a llarg termini dels residus radioactius de la fàbrica d'urani de Comurhex-Malvési (França), la major planta de refinat i conversió d'urani al món. 2010 – 2018.
- Membre del Comitè d'Experts (creat pel Ministeri de Cultura d'Espanya i UNESCO) per a la construcció d'un túnel prop de la basílica de la Sagrada Família i altres edificis protegits per la UNESCO a Barcelona. 2011-2012.
- Membre del Comitè Assessor de Túnels i Obres Singulares de la Generalitat de Catalunya. Organisme creat per la Llei d'Obra Pública de Catalunya. Des de 2007.
- Membre del Comitè Assessor de Túnels de l'Ajuntament de Barcelona per a la construcció dels túnels del Tren d'Alta Velocitat al centre de Barcelona. 2009-2011.
- Obres d'Enginyeria Civil i Edificació de GISA (en l'actualitat Infraestructures S.A.). Consultor geotècnic des de 2008.
- Reconstrucció del Moll Prat. Autoritat Portuària de Barcelona. Des de 2007.
- Membre del Comitè d'Experts per a la investigació del trencament del Moll Prat. Autoritat Portuària de Barcelona. 2007.
- Danys a edificis causats per la construcció del Tren d'Alta Velocitat. Prat de Llobregat (Barcelona). Informe d'experts per ADIF. 2007-2008.
- Col·lapse del Túnel del Carme. Línia 5, Metro de Barcelona. Consultor geotècnic per GISA. 2006-2008.
- Entrada del tren d'alta velocitat a Barceloba. Tram: Hospitalet-Barcelona. Consultor geotècnic per ADIF. 2005-2008.
- Construcció de la Línia 9 del metro de Barcelona. GISA. Consultor geotècnic. Des de 2002.

- Ampliació del Port de Barcelona. Consultor geotècnic per a l'estimació de assentaments al Moll Prat. 2005-2008
- Ampliació del Port de Barcelona. Disseny geotècnic dels dies i consultor geotècnic. Des de 1997.
- Efecte de la construcció d'un túnel per al tren d'alta velocitat sobre la estructura de la Sagrada Família. Ajuntament de Barcelona i Patronat del temple 2005-2006.
- Membre del Comitè d'Experts nomenat pel Govern de Singapur per a la investigació de la col·lapse de Nicoll Highway. 2004-2005.
- Reparació dels túnels de Lilla (Tarragona) subjectes a l'expansió de guixos. Tren d'Alta Velocitat. Consultor Geotècnic per ADIF. 2003-2006.
- Ampliació de l'Aeroport de Barcelona. Tercera pista i construccions auxiliars. Consultor Geotècnic. 1999-2006.
- Mina de coure de les creus (Sevilla). Estudi de factibilitat d'una presa de residus. Consultor Geotècnic. 1999 -2001.
- Ruptura de la Presa d'Aznalcóllar () Perito judicial. 1998-2000.
- Excavació per Diagonal Mar, Barcelona. Consultor i modelització geotècnica. 1998-2000.
- Presa de terra de Jiloca. Consultor Geotècnic. 1997-1998.
- Depuradora del Llobregat, Barcelona. Consultor Geotècnic i Disseny de la Millora del Terreny. 1997-2002.
- Estudi de factibilitat d'un repositori profund en roca salina per a residus especials, Cardona. Disseny geomecànic i consultor, 1996-1997.
- Selecció de la localització del sincrotró espanyol. Consultor Geotècnic. 1995-1997.
- Bibliotheca Alexandrina, Alexandria, Egipte. Consultor sobre Millora del Terreny. 1994-1995.
- Flux de calor a oleoductes. Modelització Geotècnica. Shell UK. 1994-1995.
- Inestabilitat del vessant de Berasategui. Perit judicial. 1993-1994.
- Emissari del Besòs. Consultor Geotècnic. 1992-1995.
- Excavació profunda al voltant de la cathedral del Bon Pastor, Sant Sebastià. Disseny geotècnic i consultoria. 1990-1992.
- Ampliació del Port de Bilbao. Disseny geotècnic del dic i consultoria geotècnica. 1988-1996.
- Presa arc de Canelles (Lleida). Estudi d'estabilitat i modelització geotècnica. 1988-1994.
- Inestabilitat del vessant de Cortes de Pallars, València. Disseny de mesures correctores i consultoria geotècnica. 1987-1992.
- Aixecament de la Central Nuclear Ascó II. Modelització i consultoria geotècnica. 1986-1990.