Denise Ferreira

Ph.D., M.Sc., Civil Eng.

PERSONAL INFORMATION

Full name	Denise Carina Santos Ferreira
Date of birth:	May 17, 1983
Sex:	Female
Citizenship:	Portuguese
Researcher identifiers:	ORCID ID: 0000-0001-6994-0023 Scopus Author ID: 26534031800
URL for web site:	https://www.linkedin.com/in/denise-ferreira-fem/ https://www.researchgate.net/profile/D_Ferreira https://scholar.google.com/citations?user=FiY8WL4AAAAJ&hl=pt-PT

CONTACT INFORMATION

Address:	Calle Entença 82, 2-2 08011 Barcelona, Spain
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Main research areas and specialization: Finite element analysis, Nonlinear Finite Element Models, Structural Analysis, Concrete Structures, Structural Assessment and Strengthening, Concrete Cracking Models, Service Life Modelling, Damage, Early Age Concrete, Software Development, Software Product Management.

EDUCATION

- PhD in Construction Engineering, Universitat Politècnica de Catalunya, Spain, March 2013.
  01/10/2008 – 02/04/2013
  Mark: Apt Cum Laude, International Mention
- MSc in Structures of Civil Engineering, Universidade do Porto, Portugal, March 2009.
  01/10/2006 – 26/03/2009
  Mark: Very good with unanimity (maximum qualification)
- Post grade in Structures of Civil Engineering, Universidade do Porto, Portugal, May 2008.
  Mark: Very good (maximum qualification)
- Civil Engineering Degree, Universidade de Aveiro, Portugal, Complete in March 2007.
  01/09/2001 – 01/03/2007
  Mark: Average of 15 out of 20 (quantitative); Five years University degree

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EXPERIENCE IN INDUSTRY

10/2023 – Present	CEO and Founder FEMCalcul Consulting femcalcul.com
08/2022 – Present	Product Specialist (Freelance) DIANA FEA BV, The Netherlands Freelance based in Spain
03/2020 – 07/2022	Consultant (Freelance) DIANA FEA BV, The Netherlands Freelance based in Spain
08/2016 – 02/2020	Consultant DIANA FEA BV Thijsseweg 11, 2629 JA, Delft, The Netherlands
07/2015– 07/2016	Software Development Engineer DIANA FEA BV Thijsseweg 11, 2629 JA, Delft, The Netherlands
01/09/2006 – 30/03/2007	Structural Engineer HDP - Office of Projects and Services of Civil Engineering, Oporto, Portugal

EXPERIENCE IN ACADEMIA

07/2015 – 03/2016	Postdoctoral Researcher Faculty of Civil Engineering and Geosciences, Delft University of Technology (TU Delft) Delft, The Netherlands.
04/2013 – 06/2015	Postdoctoral Researcher Department of Construction Engineering, Universitat Politècnica de Catalunya (UPC), Barcelona.
10/2008 – 04/2013	Researcher, PhD Student Department of Construction Engineering, Universitat Politècnica de Catalunya (UPC), Barcelona.
04/2007 – 06/2008	Research fellow Faculty of Engineering, Department of Civil Engineering, Universidade do Porto, Portugal

HONORS, FELLOWSHIPS AND AWARDS

09/2015	Special Doctoral Award issued by Universitat Politècnica de Catalunya (UPC), Barcelona.
01/12/2013 – 30/11/2015	Post-Doctoral 2-years Individual Fellowship (Post-doctoral Junior Researcher) from the Government of Catalonia (AGAUR) 2013 (ref. PDJ 2013-00022).
01/10/2008 – 30/09/2012	Doctoral Individual International Fellowship for 4-years from Portuguese Foundation for Science and Technology (FCT) 2008 (ref SFRH/BD/43232/2008).
01/04/2007 – 30/06/2008	Research Fellowship from Portuguese Foundation for Science and Technology (FCT) in Research Project (POCI/ECM/56458/2004), Faculty of Engineering, Universidade do Porto.
27/09/2006	Academic award from the Portuguese Company 'Martifer' for the best student in the discipline of Metallic Structures in Universidade de Aveiro (Civil Eng. degree)
01/02/2005 – 30/07/2005	ERASMUS Scholarship from Universidade de Aveiro, for one semester of undergraduate studies in the Universitat Politècnica de Catalunya, Barcelona, Spain.

ACADEMIC ACREDITATIONS

11/07/2014	Tenure-track lecturer accreditation from Catalan University Quality Assurance Agency (AQU Catalunya).

TEACHING ACTIVITIES[1]

2023	Invited Professor: one class (3h), Nonlinear Analysis, Master Structural Engineering, Department of Civil Engineering, UPC, Barcelona.
2014-2015	Discipline: Reinforced concrete. Undergraduate studies, Course of Construction Engineering, Department of Construction Engineering, UPC, Barcelona. (4 hours / week – 1 semester, 40 students)
2009-2015	Discipline: Nonlinear Analysis of Concrete Structures. Graduate studies, MSc in Structural and Construction Engineering; Department of Construction Engineering, UPC, Barcelona. (4 hours / course – 1 semester, 50 students approx.)

SUPERVISION OF STUDENTS[1]

Graduate students: 01/02/2014 – present	4 Students, MSc in Structural & Construction Eng.
Undergraduate students: 01/09/2013 – present	6 Students, Civil Engineering degree

[1] The detailed description of the teaching and tutoring activities is at the end of the CV

Department of Construction Engineering, Universitat Politècnica de Catalunya (UPC).

INSTITUTIONAL RESPONSIBILITIES

2014 – present Member of Department Council, Department of Construction Engineering, UPC.

MEMBERSHIPS OF RESEARCH GROUPS

- Member of Research Unit 'CONSTRUCT' Institute of R&D in Structures and Construction, settled in the Faculty of Engineering of the University of Porto, Portugal (http://paginas.fe.up.pt/~construct/). Since 2014 to 2016.

- Member of 'Grup Consolidat de Tecnologia d'Estructures', Department of Construction Engineering, UPC, Spain, recognised by the Government of Catalonia. Since 2014 to 2015.

- Member of Research Group 'LABEST - Laboratory for the Concrete Technology and Structural Behaviour', Faculty of Engineering of the University of Porto, Portugal (www.fe.up.pt/labest). Since 2006 to 2014.

PARTICIPATION IN INTERNATIONAL RESEARCH ACTIONS

- European Cooperation in Science and Technology, COST ACTION TU1404: Towards the next generation of standards for service life of cement based materials and structures. Since March 2015 to present.
    - Member of WG3: Development of recommendations and products.
    - Participation in 1st Workshop of COST ACTION TU1404, 16 and 17 of April, Ljubljana, Slovenia. Presentation of posters & Participation in meetings of WG3.

PARTICIPATION IN RESEARCH PROJECTS WITH PUBLIC FUNDING

1. A fast method for preliminary assessment of concrete structures with nonlinear finite element analysis. Dutch Ministry of Infrastructure and the Environment and Delft University of Technology (TU Delft). From October 2014 to June 2015.
   Funded by the Ministry of Infrastructure and the Environment of The Netherlands, Rijkswaterstaat (RWS). Developed at TU Delft with participation of TNO DIANA BV.
   Position: Researcher, Participants: Prof. Max Hendriks, Prof. Jan Rots and Dr. Ane de Boer.

   Goals / Tasks: This project aims at the development and implementation of layered models for relatively rapid and robust finite element analysis of concrete structures, and to sharpen the existing Dutch Guidelines for Nonlinear Finite Element Analysis of Concrete Structures.

2. Performance-based-design of partially prestressed concrete structures. Proposal of new design methodology, experimental verification and design criteria. Universitat Politècnica de Catalunya. From January 2013 – December 2015.
   Financed by the Spanish Ministry of Economics and Competitiveness (BIA2012-36848). Competitive call.
   Position: Researcher, Principal researcher: Prof. Jesús Bairán

   Goals / Tasks: Development of Performance-Based-Design methods and models for cracked concrete and optimized use of partially prestressing as effective mean for durability and safety through an objective methodology. Effects of shear forces and means control its cracking.

3. Evaluation of the effects of deterioration, repair and retrofit of structures. Theoretical model and experimental verification. Universitat Politècnica de Catalunya. From January 2009 to December 2012.
   Financed by the Spanish Ministry of Science and Innovation (BIA2009-11764). Competitive call.
   Position: Researcher, Principal researcher: Prof. Antonio Marí

Goals / Tasks: Development and validation of numerical models to simulate deterioration processes in existing structures and its consequences in structural performance. Simulation of repair / retrofit actions in order to design it more efficiently. Thermo-mechanical filament model for early-age effects in concrete.

4. Study of the shear resistance of reinforced concrete beams with high quantity of fine aggregates. Universitat Politècnica de Catalunya. From January 2009 to December 2011.
   Financed by the Spanish Institute of Cement and its Applications (IECA) to perform pre-standard research (POCI/ECM/56458/2004)
   Position: Researcher, Principal researcher: Prof. Antonio Marí

5. Early age concrete: prediction of the behaviour. Faculty of Engineering of the University of Porto. From March 2007 to July 2008.
   Financed by Portuguese Foundation for Science and Technology (FCT) (POCI/ECM/56458/2004). Competitive call.
   Funding: 90.000 euros
   Position: Research Fellow, Principal researcher: Prof. Rui Faria

PARTICIPATION IN CONTRACTS FOR RESEARCH, CONSULTANCY & DEVELOPMENT

1. Support for research and advice on structural issues on infrastructure managed by the Catalan Administration of Infrastructure (Infraestructures de la Generalitat de Catalunya, SAU (Infraestructures.cat)). From May 2015 to April 2016. Responsable: Prof. Antonio Marí (UPC).

STAYS FOR RESEARCH & DEVELOPMENT

02/01/2015 – 31/01/2015	Delft University of Technology & Company TNO DIANA BV, Delft, The Netherlands. Topics: *Pilot implementation of the model developed in the PhD Thesis in the software DIANA*; Works on the project: *'A fast method for preliminary assessment of concrete structures with nonlinear finite element analysis'*. Responsible researchers: Prof. Jan Rots, Prof. Max Hendriks.
01/05/2011 – 30/08/2011	LABEST - Laboratory for the Concrete Technology and Structural Behaviour, Faculty of Engineering of the University of Porto (FEUP), Portugal. Topic: *work on numerical stability of the computational code developed during PhD.* Principal Investigator: Prof. Rui Faria.

PUBLICATIONS

Editor

1. DIANA User's Manual, Release 10.3, Copyright © 2019, DIANA FEA BV. Document Editor: Denise Ferreira.

2. DIANA User's Manual, Release 10.4, Copyright © 2020, DIANA FEA BV. Document Editor: Denise Ferreira.

3. DIANA User's Manual, Release 10.5, Copyright © 2022, DIANA FEA BV. Document Editor: Denise Ferreira.

4. DIANA User's Manual, Release 10.6, Copyright © 2022, DIANA FEA BV. Document Editor: Denise Ferreira.

5. DIANA User's Manual, Release 10.7, Copyright © 2023, DIANA FEA BV. Document Editor: Denise Ferreira.

6. DIANA User's Manual, Release 10.8, Copyright © 2024, DIANA FEA BV. Document Editor: Denise Ferreira.

Peer-reviewed JCR indexed journals[2]

1. Oller E.**, Ferreira D.**, Marí A., Bairán J., *Numerical analysis of reinforced concrete beams strengthened in shear by externally bonded (EB) fibre reinforced polymer (FRP) sheets,* Hormigón y acero, 69 (285), pp. 113-120, 2018.

2. **Ferreira D.**, Bairán J., Marí A., *Influence of time-dependent restrained strains in the shear response of RC frames,* Materials and Structures, 50 (15), 2017.

3. **Ferreira D.**, Bairán J., Marí A., *Shear strengthening of RC beams by means of vertical prestressed reinforcement: numerical studies,* Structure and Infrastructure Engineering, 2016, Vol. 12 (3), p. 394-410.

4. **Ferreira D.**, Oller E., Marí A., Bairán J., *Analysis of FRP shear strengthening solutions for reinforced concrete beams considering debonding failure,* Journal of Composites for Construction, ASCE, 2016, Vol. 20 (5), p. 04016018.

5. **Ferreira D.**, Oller E., Barris C., Torres L., *Shear strain influence in the service response of FRP reinforced concrete beams,* Composite Structures, 2015, Vol. 121, p. 142-153.

6. **Ferreira D.**, Bairán J., Marí A., Faria R., *Nonlinear analysis of RC beams using a hybrid shear-flexural fibre beam model*, Engineering Computations, 2014, Vol. 31 (7), p. 1444-1483.

7. **Ferreira D.**, Bairán J., Marí A., *Efficient 1D model for blind assessment of existing bridges: simulation of a full scale loading test and comparison with higher order continuum models,* Structure and Infrastructure Engineering, 2014, DOI:10.1080/15732479.2014.964734, in press.

8. **Ferreira D.**, Oller E., Bairán J., Carrascón S., Marí A., *Influence of the fines content in the flexural and shear structural response of reinforced concrete beams,* (in Spanish) Informes de la Construcción, accepted for publication (in press), 2014.

9. **Ferreira D.**, Crespo M.D., Marí A., Bairán J., *Thermo-mechanical simulation of the ConCrack Benchmark RL1 test with a filament beam model,* Engineering Structures, 2014, vol. 73, p. 143-159.

10. **Ferreira D.**, Bairán J., Marí A., *Numerical simulation of shear-strengthened RC beams,* Engineering Structures, 2013, Vol. 46, p. 359-374.

11. **Ferreira D.**, Marí A, Bairán J., *Assessment of prestressed concrete bridge girders with low shear reinforcement by means of a nonlinear filament frame model*, Structure and Infrastructure Engineering, 2014, vol. 10 (12), p. 1531-1546.

12. **Ferreira D.**, Oller E., Marí A., Bairán J., *Numerical analysis of shear critical RC beams strengthened in shear with FRP laminates*, ASCE Journal of Composites for Construction, 2013, Vol. 17 (6), Article number, 04013016, pp. 1-11.

[2] IP = Impact Factor correspondent to the year of publication (in case of publication in the current year, impact factor relates to the year before)

13. Azenha M., Faria R., **Ferreira D.**, *Identification of early age concrete temperatures and strains: experimental validation of numerical models*, Cement & Concrete Composites, Vol. 31 (6), p. 369-378, 2009.

Peer-reviewed not indexed journals

1. **Ferreira D.**, Azenha M., Faria R., *Monitoring early age behaviour of concrete: experimental validations of numerical models* (in Portuguese), Journal of APAET – Portuguese Association of the Stress Experimental Analysis, Vol. 16, p. 25-37, 2008 (ISSN 1646-7078).

Thesis

1. **Ferreira, D.** *A model for the nonlinear, time-dependent and strengthening analysis of shear critical frame concrete structures*. Ph.D. Dissertation, 2013, Ph.D. in Construction Engineering, Department of Construction Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain.

2. **Ferreira, D.** *Modelling and identification of the early age behaviour of concrete structures* (in Portuguese). M.Sc. Dissertation, 2009, M.Sc. in Structures of Civil Engineering, Faculty of Engineering, Universidade do Porto, Oporto, Portugal.

3. **Ferreira, D.** *Analysis of reinforced concrete structures subjected to deterioration and repair*. M.Sc. Dissertation, 2009, M.Sc. in Structural and Construction Engineering, Department of Construction Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain.

Publications in proceedings refereed – International conferences

1. Hassanzadeh M. and **Ferreira D.**, *Thermo-mechanical analysis of a concrete arch dam. Influence of temperature and fracture energy. ICOLD Annual Meeting of International Commission on Large Dams, 2017.*

2. **Ferreira D.**, Kikstra W. P. , Hendriks M. , Schreppers GJ., Boer de A,, *Reduced nonlinear finite element models for quick-scan assessment of concrete infrastructure*, in proceeds. Life-Cycle of Engineering Systems: Emphasis on Sustainable Civil Infrastructure, 2016, CRC Press, eBook ISBN 9781315375175, p. 2099-2106.

3. **Ferreira D.**, Oller E., Marí A, Bairán J., *Análisis numérico de vigas de hormigón armado reforzadas externamente a cortante mediante laminados de polímeros reforzados con fibras*, VII Congreso Internacional de Estructuras:[resúmenes publicados en la revista Hormigón y Acero (ISSN 0439-5689), v. 68, especial Congreso, junio 2017, pp. 312-314, Asociación Española de Ingeniería Estructural (ACHE).

4. Crespo M. D., **Ferreira D.**, Bairán J., Marí A., *Numerical simulation since early ages of the RG8 beam test from concrack benchmark by means of a 3D fibre frame model*, International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM), 2016.

5. **Ferreira D.**, Oller E., Marí A, Bairán J., *Bond failure of FRP in nonlinear analysis of shear strengthened concrete beams*, Proc. REHAB STRUCTURES 2015, International Conference on Recent Advances in Rehabilitation and Sustainability of Structures, 1-2 June 2015, Azores, Portugal.

6. **Ferreira D.**, Bairán J., Marí A., *Nonlinear FE analysis of a full scale in situ test on a RC bridge by means of a 1D layered frame model*, Proc. EURO-C 2014, Computational Modelling of Concrete and Concrete Structures, 24-27 March 2014, St. Anton am Alberg, Austria. pp. 917-925 (ISBN: 978-1-138-00145-9).

7. Bairán J., **Ferreira D.**, Duarte N., Marí A., Celada U., *Control of shear and flexure cracking through partial prestress* (in Spanish), Proc. VI Congreso de ACHE – Spanish Science-Technical Association of Structural Concrete, 17-19 June, 2014, Madrid, Spain (ISBN: 978-84-89670-80-8).

8. **Ferreira D.**, Marí A., Bairán J., *Assessment of prestressed concrete bridge girders with low shear reinforcement by means of a nonlinear filament frame model*, Proc. VI Congreso de ACHE – Spanish Science-Technical Association of Structural Concrete, 17-19 June, 2014, Madrid, Spain.

9. **Ferreira D.**, Bairán J., Marí A., *Numerical assessment of RC frame structures under high shear stresses*, Proc. First ECCOMAS – European Community on Computational Methods in Applied Sciences - Young Investigators Conference, YIC2012, 24-27 April 2012, Aveiro, Portugal. (CD-ROM, paper 54) (ISBN/ISSN 115. 978-972-99784-2-5).

10. Marí A., M. D. Crespo, C. Molins, J. Bairán, **Ferreira D.**, *A filament beam-column model for the non-linear analysis of RC frames including the early age effects*, Proc. ConCRACK 3 – RILEM-JCI International Workshop on Crack Control of Mass Concrete and Related Issues Concerning Early-Age of Concrete Structures, 15-16 March 2012, Paris, France.

11. **Ferreira D.,** Faria R., Bairán J., Marí A., *Nonlinear analysis of RC frame elements including shear effects*, Proc. International Conference on Advances in Nonlinear Models – Structural Concrete Applications, CORAN 2011, ECCOMAS - European Community on Computational Methods in Applied Sciences, 24-25 November, 2011, Coimbra, Portugal. pp. 113-133. (ISBN/ISSN 978-972-96524-7-9).

12. **Ferreira D.**, Bairán J., Marí A., *Simplified nonlinear analysis of reinforced concrete beams under shear forces: numerical model and experimental validation* (in Spanish), Proc. V Congreso de ACHE – Spanish Science-Technical Association of Structural Concrete, 25-27 October, 2011, Barcelona, Spain. CD-ROM, resume p. 35-36. (ISBN/ISSN 978-84-89670-73-0).

13. Crespo M. D., A. Marí, J. Bairán, **Ferreira D.**, *Simulation of the development of the early age temperature in a reinforced concrete beam of large dimensions* (in Spanish), Proc. ENIEF 2011, XIX Congreso sobre Métodos Numéricos y sus Aplicaciones, Argentinean Association of Computational mechanics, 1-4 November, 2011, Santa Fe, Argentina.

14. **Ferreira D.**, Azenha M., Faria R., *Parametric study of the influence of heat curing methods in residual stresses of a precast concrete bridge beam*, Proc. CCC2008: Challenges for Civil Construction, FEUP, 16-18 April 2008, Oporto, Portugal. (CD-ROM), resume p. 90-91. (ISBN/ISSN 978-972-752-100-5).

15. **Ferreira D.**, Cachim P., Ferreira V., *Incorporation of paper sludge in mortars and concrete*, Proc. IV International Materials Forum – Global Materials for the XXI century: Challenges to Academia and Industry, FEUP, 1-4 April 2007, Oporto, Portugal.

Publications in proceedings refereed – National conferences

1. **Ferreira D.**, Bairán J., Marí A., *Partial prestressing for control of shear and bending cracking in concrete structures* (in Portuguese), Proc. BE2014 - Encontro Nacional Betão Estrutural, LNEC, 26-28 November, 2014, Lisbon, Portugal.

2. **Ferreira D.**, Bairán J., Marí A., *Numerical simulation of reinforced and prestressed frame structures critical to shear and strengthening proposals* (in Portuguese), Proc. BE2012 - Encontro Nacional Betão Estrutural, FEUP, 24-26 Octubre, 2012, Oporto , Portugal. (CD-ROM) resume p. 161-162. (ISBN/ISSN 978-972-752-145-6).

3. **Ferreira D.**, Faria R.,Bairán J., Marí A., *Nonlinear and time-dependent model of reinforced concrete frame elements submitted to shear* (in Portuguese), Proc. Congresso de Métodos Numéricos em Engenharia 2011, APMTAC - Portuguese Association of Theoretical Applied and Computational Mechanics, 14-17 June, 2011, Coimbra, Portugal. (CD-ROM) resume p. 326. (Legal Deposit PT - 329390/11).

4. Bairán J., Marí A., Mohr S., **Ferreira D**. *Avances en modelos de análisis de estructuras de barras de hormigón frente a combinaciones de esfuerzos normales y tangentes*. Jornada de Recerca i Innovació a l'Escola de Camins. "Jornada de Recerca i Innovació a l'Escola de Camins". Barcelona: Universitat Politècnica de Catalunya. Escola Tècnica Superior d'Enginyers de Camins Canals i Ports de Barcelona, 15 November, 2011, Barcelona, Spain.

5. **Ferreira D.**, Azenha M., Faria R., *Monitoring early age behaviour of concrete: experimental validations of numerical models* (in Portuguese), Proc. 7º Congresso Nacional de Mecânica Experimental, UTAD - Universidade de Trás-os-Montes e Alto Douro, 23-25 January, 2008, Vila Real, Portugal. (CD-ROM) resume p. 113-115. (ISBN/ISSN 978-972-669-851-7).

6. **Ferreira D.**, Azenha M., Faria R., *Monitoring and modelling the early age behaviour of concrete: application to a precast beam* (in Portuguese), Proc. BE2008 – Encontro Nacional de Betão Estrutural, Universidade do Minho, 5-7 Novembre, 2008, Guimarães, Portugal. (CD-ROM) resume p. 201-202. (ISBN/ISSN 978-989-95961-0-8).

7. Azenha M., **Ferreira D.**, Faria R., *Monitoring and numerical simulation of the constructive process of a gravity concrete dam* (in Portuguese), Proc. BE2008 – Encontro Nacional de Betão Estrutural, Universidade do Minho, 5-7 November, 2008, Guimarães, Portugal. (CD-ROM) resume p. 203-204. (ISBN/ISSN 978-989-95961-0-8).

Scientific reports & Internal publications

1. **. Ferreira**, J. Bairán, Kikstra W. P. (2016). *Application of the reduced models to the analysis of a full-scale concrete bridge*. Project: "Reduced models in DIANA. A fast method for preliminary assessment of concrete structures with nonlinear finite element analysis". Funded by the Ministry of Infrastructure and the Environment of The Netherlands, Rijkswaterstaat (RWS). TU Delft. Participants: Prof. Max Hendriks, Dr. Ane de Boer, Prof. Jan Rots and Dr. Ane de Boer. Report number: TUD/CITG/B&I/CM-2016-17.

2. **D. Ferreira**, J. Bairán, Kikstra W.P. (2016). *Shear shell formulations in finite element modelling: software implementation issues and feasibility studies*. Project: "Reduced models in DIANA. A fast method for preliminary assessment of concrete structures with nonlinear finite element analysis". Funded by the Ministry of Infrastructure and the Environment of The Netherlands, Rijkswaterstaat (RWS). TU Delft. Participants: Prof. Max Hendriks, Dr. Ane de Boer, Prof. Jan Rots and Dr. Ane de Boer. Report number: TUD/CITG/B&I/CM-2016-15.

3. **D. Ferreira**, Kikstra W.P. (2015). *Shear beams in finite element modelling: software implementation and validation*. Project: "Reduced models in DIANA. A fast method for preliminary assessment of concrete structures with nonlinear finite element analysis". Funded by the Ministry of Infrastructure and the Environment of The Netherlands, Rijkswaterstaat (RWS). TU Delft. Participants: ir Wijtze Pieter Kikstra, Prof. Max Hendriks, Dr. Ane de Boer, Prof. Jan Rots and Dr Gerd-Jan Schreppers. Report number: TUD/CITG/B&I/CM-2015-14.

4. **D. Ferreira** (2015). *Calculation of benchmarks with a shear beam model*. Project: "Reduced models in DIANA. A fast method for preliminary assessment of concrete structures with nonlinear finite element analysis". Funded by the Ministry of Infrastructure and the Environment of The Netherlands, Rijkswaterstaat (RWS). TU Delft. Participants: Prof. Max Hendriks, Dr. Ane de Boer, Prof. Jan Rots. Report number: TUD/CITG/B&I/CM-2015-13

5. A. Marí, J. Bairán, **D. Ferreira**, N. Duarte, A. Roiz (2011). *Study of the shear resistance of reinforced concrete beams with high quantity of fine aggregates* (in Spanish). Research Project Financed by the Spanish Institute of Cement and its Applications (IECA) to perform pre-standard research (POCI/ECM/56458/2004), Universitat Politècnica de Catalunya.

6. **Ferreira D.** (2010), *A model for the non-linear and time-dependent analysis of reinforced concrete structures including shear effects*. Thesis proposal, certificate of conclusion of the doctorate research period, Universitat Politècnica de Catalunya, Mark: Accepted.

7. **Ferreira D.** (2009), *Analysis of reinforced concrete structures subjected to deterioration and repair*. Master dissertation: certificate of conclusion of the formation period of the doctoral program, Universitat Politècnica de Catalunya (UPC), Pass with honours (9,5/10)

8. **Ferreira D.**, Faria R., Azenha M. (2008), *Experimental test for the evaluation of the potentialities of the sensors for measuring temperatures and strains in early age concrete* (in Portuguese). Research Project, Early age concrete: prediction of the behaviour. POCI/ECM/56458/2004, FCT, FEUP, Portugal.

9. **Ferreira D.**, Faria R., Azenha M. (2008), *Field test: measurement of temperatures and strains during the early ages of a precast prestressed beam and its correspondent thermo-mechanical analysis* (in Portuguese). Research Project, Early age concrete: prediction of the behaviour. POCI/ECM/56458/2004, FCT, FEUP.

10. **Ferreira D.**, Faria R., Azenha M. (2007), *Calorimetric characterization of cements in the hydration phase and the influence of additives and addictions* (in Portuguese). Research Project, Early age concrete: prediction of the behaviour. POCI/ECM/56458/2004, Portuguese Foundation for Science and Technology (FCT), Faculdade de Engenharia da Universidade do Porto (FEUP), Portugal

PARTICIPATION IN INTERNATIONAL BENCHMARKS

- International Contest: Shear capacity of large T-shaped prestressed concrete girder
  Initiative of Delft University of Technology, Dutch Ministry of Infrastructure and the Environment and University of Parma, 2014. UPC team: **D. Ferreira**, J. Bairán and A. Marí.

  Report: *Prediction of experimental results*. Participation in Shear Force Workshop in Parma, 5 November 2015 - Oral presentation.

- ConCRACK - International Benchmark on Control of cracking in RC structures (www.concrack.org)
  CEOS.fr - Behaviour and assessment of special construction works concerning cracking and shrinkage, French Research Project. Research Project Funded by the European Joint Research Centre, French National Research Program and French Ministry of Ecology, Sustainable Development and Energy.
  - Participant team from UPC: A. Marí, J. Bairán, M. D. Crespo and D. Ferreira.
    Report delivered: *Thermo-Mechanical Simulation of the RL1 Test: large beam specimen loaded in bending after free shrinkage*.
  - Tasks: Perform numerical simulations since early ages with models developed at UPC (thermo-mechanical filament model for RC structures) for blind predictions of benchmarks and presentation of works on shear and flexure crack control in partially prestressed concrete.
  - Participation in the ConCRACK Workshop 2 in Paris 2011 and in ConCRACK Workshop 4 in Ispra in 2014 (Oral Presentation).

INVITED LECTURES / PRESENTATIONS IN WORKSHOPS AND MEETINGS

- 1st Workshop of COST ACTION TU1404: Towards the next generation of standards for service life of cement based materials and structures. European Cooperation in Science and Technology, 16 and 17 of April, Ljubljana, Slovenia.
  Presentation of posters: Poster 1 – presentation of the research work and lab facilities of the Department of Construction Engineering at UPC; Poster 2: presentation of the research work of Structural Technology;
  Participation in meetings: WG3 - Development of recommendations and products.

- DIANA International Users Meeting, 4 November 2015, Parma, Presented work: *CONSHEAR model from UPC: A shear-sensitive fibre beam formulation for nonlinear, time-dependent and phased analysis of RC structures.* by **D. Ferreira**, J. Bairán and A. Marí – Oral presentation. (to be presented)

- Meeting of *fib* Task Group 4.1 'Serviceability Models', Madrid, September 1 2014. Presented work: *Efficient 1D model for serviceability analysis of shear-sensitive concrete elements* by **D. Ferreira**, A. Marí and J. Bairán – Oral presentation.

- ConCRACK4 – *4th Workshop on Control of Cracking and Durability of Reinforced Concrete Structures, Engineering and Standard Issues*. Joint research Centre (European Commission) and CEOS.fr (French National Research Programme), 20-21 March 2014, JRC Ispra, Italy. Presented works:
  - *A filament beam model for the thermo-mechanical analysis of RC structures. Simulation of the Concrack2 RL1 test* by J. Bairán, M. D. Crespo, **D. Ferreira**, A. Marí – Oral presentation.
  - *Shear and flexure cracking in partially prestressed concrete* by J. Bairán, A. Marí, **D. Ferreira**, N. Duarte, U. Celada.

MAJOR COLLABORATIONS WITH RESEARCH, INDUSTRY & ADMINISTRATIONS

2014 – 2015	Collaboration with TNO DIANA BV, Delft, The Netherlands, for implementation of the model in the FEM software DIANA
2014 – 2015	Collaboration with TU Delft and Dutch Ministry of Infrastructure and the Environment, Rijkswaterstaat in the Dutch Guidelines for Nonlinear Finite Element Analysis of Concrete Structures. Scope: Girder Members with NLFEM.
2013 – 2014	With Prof. A. Cladera, from Physics Department, University of Balearic Islands, Spain: collaboration with coding and numerical simulations in research project, 'Intelligent materials in structural concrete. Application of Shape Memory Alloys as shear reinforcement of linear members' (BIA2012-31432).
2013 – 2014	With Prof. L. Torres and Dr. C. Barris, from Research Group Analysis and Advanced Materials for Structural Design, University of Girona, Spain: collaboration with numerical simulation of RC beams internally reinforced with FRP longitudinal bars.
2014 – 2015	With Prof. F. Biondini from Politecnico de Milano: collaboration in research work on structural modelling formulations for coupling damage due to corrosion with shear effects.
2014 – 2015	With Dr. M. Guiglia from Politecnico de Torino: collaboration in research work on shear effects on serviceability analysis of RC beams (numerical and analytical approaches), in the ambit of the fib Task Group 4.1 'Serviceability Models'.

ATTENDANCE OF CONFERENCES AND SCIENTIFIC MEETINGS – INTERNATIONAL EVENTS

- REHAB STRUCTURES 2015, International Conference on Recent Advances in Rehabilitation and Sustainability of Structures, 1-2 June 2015, Azores, Portugal. Oral contribution.
- 1st Workshop of COST ACTION TU1404: Towards the next generation of standards for service life of cement based materials and structures. 16 and 17 of April, Ljubljana, Slovenia. Posters (2) contribution and attendance of meetings.
- DIANA International Users Meeting, 4 November 2015, Diana Users Association, Parma, Italy. Oral contribution.
- International Contest: Shear capacity of large T-shaped prestressed concrete girder. Workshop in Parma, Italy, 5 November 2015. Oral contribution.
- *fib* Task Group 4.1 'Serviceability Models', Madrid, September 1 2014. Oral contribution.

- Computational Modelling of Concrete and Concrete Structures, EURO-C 2014, 24-24 March 2014, St. Anton am Alberg, Austria. Oral contribution.
- 'ConCRACK4 – 4th Workshop on Control of Cracking and Durability of Reinforced Concrete Structures, Engineering and Standard Issues.' Joint research Centre (European Commission), CEOS.fr (French National Research Programme), DRI, 20-21 March 2014, JRC Ispra, Italy. Oral contribution.
- 'Vocation training in assessment of existing structures', Leonardo da Vinci European Project, Universitat Politècnica de Catalunya, 14 June 2012, Barcelona, Spain.
- 'First ECCOMAS Young Investigators Conference - YIC2012', European Community on Computational Methods in Applied Sciences, Universidade de Aveiro, 24-27 April, 2012, Aveiro, Portugal. Oral contribution.
- 'International Conference on Advances in Nonlinear Models – Structural Concrete Applications – CORAN' 2011, ECCOMAS - European Community on Computational Methods in Applied Sciences, 24-25 November, 2011, Coimbra, Portugal. Oral contribution.
- 'CONCRACK 2, 2nd Workshop on Control of cracking in RC structures: Restitution of the International Benchmark 'ConCRACK', CEOS.fr - Behaviour and Assessment of special construction works concerning cracking and shrinkage, 20-22 June, 2011, Paris, France.
- 'Workshop on Recent Developments on Shear and Punching Shear in RC and FRC Elements', University of Brescia, DICATA – Department of Civil, Architectural, Environmental and Land Planning Engineering, 16-18 October, 2010, Salò, Italy.
- 'SEDUREC 2009, International Symposium on Safety and Durability of Materials and Constructions', CIMNE – International Center for Numerical Methods in Engineering, 25-27 February, 2009, Barcelona, Spain.
- 'CCC2008: Challenges for Civil Construction', Faculty of Engineering of the University of Porto, 16-18 April, 2008, Oporto, Portugal.
- 'IV International Materials Forum – Global Materials for the XXI century: Challenges to Academia and Industry', Faculty of Engineering of the University of Porto, 1-4 April, 2007, Oporto, Portugal. Poster contribution.
- 'V Congresso de ACHE', Spanish Science-Technical Association of Structural Concrete, 25-27 October, 2011, Barcelona, Spain.

ATTENDANCE OF CONFERENCES AND SCIENTIFIC MEETINGS – NATIONAL EVENTS

- 'BE2014 - Encontro Nacional Betão Estrutural', LNEC, 26-28 November, 2014, Lisbon, Portugal.
- 'BE2012 Encontro Nacional Betão Estrutural', Faculty of Engineering of the University of Porto, 24-26 October, 2012, Oporto , Portugal. Oral contribution.
- 'Congresso de Métodos Numéricos em Engenharia 2011', APMTAC – Portuguese Association of Theoretical Applied and Computational Mechanics, 14-17 June, 2011, Coimbra, Portugal. Oral contribution.
- '7º Congresso Nacional de Mecânica Experimental', UTAD – Universidade de Trás-os-Montes e Alto Douro, 23-25 January, 2008, Vila Real, Portugal. Oral contribution.
- 'BE2008 Encontro Nacional de Betão Estrutural', Universidade do Minho, 5-7 November, 2008, Guimarães, Portugal. Oral contribution.

TEACHING AND TUTORING (detailed description)

Teaching assistant:

- Discipline: *Reinforced concrete*, Course of Construction Engineering (3rd year, undergraduate level), Department of Construction Engineering, UPC. 4 hours / week, 1 semester, 40 students. Years: 2015

- Discipline: Nonlinear Analysis of Concrete Structures', MSc, Department of Construction Engineering (graduate level), UPC. 4 hours / 1 semester, 70 students. 0.5 ECTS of total of 5ECTS. Years: 2009, 2014, 2015.

Punctual Lectures:

- MSc Structural and Construction Engineering, Department of Construction Engineering (graduate level), UPC, April 2014 & 2015. Title: Nonlinear analysis of structures under important shear stresses.

- Department of Construction Engineering (graduate and undergraduate level), April 2014, UPC. Title: Training as user of the nonlinear numerical model CONSHEAR.

Supervision:

MSc Thesis (finished)

1. Julian Naranjo, *Nonlinear analysis of reinforced concrete beams with corrosion damaged stirrups.* 2014, MSc Thesis, Structural and Construction Engineering, UPC. (in Spanish)

Final course report - minor thesis (finished)

1. David Salas, *Numerical modelling of concrete beams reinforced with Shape Memory Allows*. 2014, Minor Thesis, Civil Engineering Degree, UPC. (in Spanish)
2. Alejandro Nogales, *Study of force redistributions in continuous beams reinforced with FRP bars*. 2014, Minor Thesis, Civil Engineering Degree, UPC. (in Spanish)
3. Ismael Rodriguez, *Study of the premature debonding in FRP-shear strengthened beams.* 2014, Minor Thesis, Civil Engineering Degree, UPC. (in Spanish)
4. Ervin Rulido, *Shear behaviour of fibre reinforced concrete beams.* 2014, Minor Thesis, Civil Engineering Degree, UPC. (in Spanish)

TRAINING IN TEACHING

17.03.2014 - 18.03.2014	Teaching training: How our students learn: methods and techniques to promote interest. Workshop (8 hours). Institute of Education Sciences, UPC.

COMMISSIONS OF TRUST

14/07/2014 – 2017	Reviewer in *Engineering Computations*, Emerald Insight JCR indexed journal (2013): IP=1.206, Q2 Engineering, Multidisciplinary.
22/06/2014 – 2017	Reviewer in *Advances in Structural Engineering*, Multi-Science Publ. JCR indexed journal (2013): IP=0.603, Q3 Civil Engineering.
01/05/2014 – 2017	Reviewer in *Structure and Infrastructure Engineering*, Taylor & Francis JCR indexed journal (2013): IP=0.954, Q3 Civil Engineering.
17/04/2014 – 2017	Reviewer in *Engineering Structures*, Elsevier JCR indexed journal (2013): IP=1.767, Q1 Civil Engineering.

SKILLS AND ABILITIES

Languages

Portuguese	Native

English	Proficiency level (reading, writing, speaking)
Spanish	Proficiency level (reading, writing, speaking)
Catalan	Proficiency level (reading), Medium level (writing, speaking)