CURRICULUM VITAE

OF

EUGENIO OÑATE IBAÑEZ DE NAVARRA

February 2015

I N D E X

PERSONAL DATA

NAME: Eugenio Oñate Ibáñez de Navarra

DATE OF BIRTH: 28 March 1953

TELEPHONE: +34.93. 211.46.85

PROFESSIONAL DATA

PRESENT POSITION: Full Professor of Structural Mechanics since 1987

DEDICATION: Full time

WORK PLACE: Technical University of Cataluña (UPC), Civil Engineering School, Dpt. of Strength of Materials

WORK ADDRESS: Edificio C-1, Campus Norte UPC, Gran Capitán, s/n. 08034 Barcelona. Spain Telephone: +34 93 205 70 16. Fax: +34 93 401 65 17 E-mail: onate@cimne.upc.edu

CURRENT WORK

E. Oñate combines the teaching and research activities at the Technical University of Cataluña (UPC) with the Executive Vicepresidence and Management of the International Center for Numerical Methods in Engineering (CIMNE). CIMNE is a research organisation created in 1987 as a Consortium between the UPC and the Generalitat of Catalunya. CIMNE specializes in the development, application and dissemination of numerical methods for the solution of engineering problems. The current staff of CIMNE amounts to 150 scientists and engineers from 20 different countries.

ACADEMIC DEGREES

Type	*University*	*Date*
Civil Engineer	ETS Ing. Caminos, Canales y Puertos, University Politécnica de Valencia.	1975
Master in Science (M.Sc.)	Civil Engineering Dpt. University College of Swansea. University of Wales (U. K.)	Thesis: Dec 1976 Degree: July 1977
Doctor in Philosophy (Ph.D.)	Civil Engineering Dpt. University College of Swansea University of Wales (U.K.) *Director of the Thesis:* Prof. O. C. Zienkiewicz	Thesis: Dec 1978 Degree: July 1979
Doctor in Civil Engineering	Ministerio de Educación y Ciencia, Spain	July 1979

G R A N T S

Grant of Ministerio de Educación y Ciencia for researchers training outside Spain. Course 1976/77
Grant for research at the Civil Engineering Department of University of Swansea. Wales. UK

Alcoa Research Grant
Course 1977/78
Grant for research at the Civil Engineering Department of University of Swansea. Wales. UK

L A N G U A G E S

(F=fair, W=well, C=correctly)

LANGUAGE	*SPEAKS*	*READS*	*WRITES*
CATALAN	W	W	F
ENGLISH	C	C	C
FRENCH	C	C	W
ITALIAN	W	W	-
GERMAN	F	F	-

SCIENTIFIC AND PROFESSIONAL POSITIONS

DATES	POSITION	INSTITUTION
Sept.76-Sept.78	Research Student	Civil Engng. Dept., Univ. College of Swansea, Wales
Sept.78-Febr.79	Research Assistant	Civil Engng. Dept., Univ. College of Swansea, Wales
Oct.78-July 87	Associate Professor	Civil Engineering School of Barcelona
June 83-April 89	Director	Civil Engineering School of Barcelona
July 87	Full Professor	Civil Engineering School of Barcelona
Jan. 1988	Executive Vice-president and Director	International Center for Numerical Methods in Engineering (CIMNE)
April 89-May 2003	President	Spanish Society for Numerical Methods in Engineering(SEMNI)
April 1991	Director	Spanish Pilot Center of the European Research Community on Flow, Turbulence and Combustion (ERCOFTAC)
May 91-October 94	Director	Dpt. of Strength of Materials (UPC)
May 91-June 95	President	Scientific Council of Supercomputing Center of Cataluña (CESCA)
June 91-Sept.96	Vice-President	European Community on Computational Methods in Applied Sciences (ECCOMAS)
June 1993	Director	Quality Research Group. CIRIT. Generalitat of Catalunya
Sept. 94-Sept.2000	Secretary General	International Association for Computational Mechanics (IACM)

Sept. 2000	President	European Community on Computational Methods in Applied Sciences (ECCOMAS)
July 2002-2010	President	International Association for Computational Mechanics (IACM)
April 2004	Honorary President	Spanish Society for Numerical Methods in Engineering (SEMNI)

INSTITUTIONAL POSITIONS

- Associated member of the Instituto Eduardo Torroja, Madrid, Spain
- Member of the Spanish Association of Pre-stressed Structures (ATEP).
- Full member of the International Association for Shell Structures (IASS).
- Member of the Managing Board of the Instituto Catalán de Ingeniería Civil (ICEC).
- Member of the Founding Council of the International Association for Computational Mechanics (IACM).
- Founding member of the International Network of Centers for Computer Applications (INCCA) of Unesco.
- Member of the European Research Community of Flow, Turbulence and Combustion (ERCOFTAC). Director of the Pilot Center in Spain from April 1991.
- Member of the Executive Council of Spanish Association for Numerical Methods in Engineering (SEMNI).
- Member of the of the Executive Council of the European Community on Computational Methods in Applied Sciences (ECCOMAS).
- Member of the of the Executive Council and the General Council of the International Association for Computational Mechanics (IACM).
- Member of the Real Academia de Doctores, Barcelona, Spain.
- Member of the International Advisory Council of the Centre of Advanced Materials and Structures (AMAS), Polish Academy of Sciences, Warsaw.
- Honorary member of the Portuguese Association of Thematical Applied and Computational Mechanics (APMTAC).

A W A R D S

- Argentinian Award "Dr. Luis Federico Leloir" to the International Cooperation in Science, Technology and Innovation, 2013
- International Association for Computational Mechanics (IACM), Gauss-Newton Medal, 2010
- Advanced Grant of the European Research Council of the European Community, November 2010
- JSCES Grand Prize (Japan), 2009
- O.C. Zienkiewicz Medal of the Polish Association for Computational Mechanics (PACM), 2009
- Ted Belytschko Applied Mechanics Award of ASME, 2009
- JSME Computational Mechanics Award, 2009
- Literati Award for Excellence to the best article published in *Engineering Computations*, 2009
- SEMNI Award to Professional Achievements, 2007
- Honorary Member of the Portuguese Association of Applied, Theoretical and Computational Mechanics (APMTAC), 2005
- University of Jyväskylä Medal (Finland), 2004
- Duran i Farell Award to the best Research and Technology Project of the University Politécnica de Cataluña, 2004
- City of Barcelona Award in Technological Research, 2002
- Literati Award for Excellence to the best article published in *Engineering Computations*, 2002
- Medal of the School of Civil Engineering of Barcelona to Professional Achievements, 2001
- Award of the Spanish Group on Fracture Mechanics, 2000
- Award of the Asociación Argentina de Mecánica Computacional (AMCA), 2000
- Accesit to the City of Barcelona Award in Technological Research, 1999
- Narcis Monturiol Award from the Catalonian Government to the Scientific Merit of CIMNE (received as Director of CIMNE), 1999
- IACM Computational Mechanics Award, 1998
- Eric Reissner Medal in Computational Mechanics, 1996
- Medal to Professional Merit of Spanish Institution of Civil Engineering, 1995
- Catalonian Medal for Research "Narcís Monturiol", 1990

HONORARY DEGREES

- Doctor Honoris Causa, Universidad "Marta Abreu", Las Villas, Cuba, March 2013
- Doctor Honoris Causa, INSA-Lyon, France, June 2012
- Honorary Fellow of the University College of Swansea (UK), 2007
- Doctor Honoris Causa, University Ovidius, Constanza, Rumania, 2000
- Fellow of the International Association for Computational Mechanics (IACM), 1998

ACADEMY MEMBERSHIP

- Foreign Member of the Accademia di Scienze e Lettere, Istituto Lombardo, Milan (Italy), 2006
- Member of the Royal Academy of Doctors, 1998

TEACHING ACTIVITIES

Responsible for the following grade courses:

1979- *Advanced Analysis of Structures*. Undergraduate course of the Civil Engineering School of the Technical University of Cataluña (UPC)

1992 *Introduction to the Finite Elements Method*. Undergraduate course of the Civil Engineering School of the Technical University of Cataluña (UPC)

Responsible for the following postgrade courses:

1980- *Introduction to the Finite Element Method*. Course for the Ph.D. Program of Civil Engineering and Structural Analysis at UPC.

1984- *Thermal Problems Analysis*. Course for the Ph. D. Program of Civil Engineering and Structural Analysis at UPC.

OTHER TEACHING ACTIVITIES

1982- Director of the Master Course on Numerical Methods for Analysis and Design in Engineering, Technical University of Cataluña (UPC)

From 1979 he has lectured more 800 teaching hours in short courses and post graduate seminars in different Spanish and foreign universities.

THESES

1. ***Thesis for the degree of Masters in Science***

   "Comparisons of finite strip methods for the analysis of box girder bridges" Ref. C/M/122/76. Civil Engineering Dept. University College of Swansea. Wales, UK. September 1976.

2. ***Thesis for the degree of Doctor of Philosophy***

   "Plastic flow in metals with special reference to: I) Coupled thermal flow. II) Thin sheet metal forming". Ref. C/Ph/51/78. Civil Engineering Dept., University College of Swansea. Wales, UK. December 1976.

SUPERVISION OF DOCTORAL THESES

1) Title: **A quasi intrinsic formulation for the finite element analysis of arches, plates and shells under large displacement in the elastoplastic regime**
Author: Javier Oliver Olivella School of Civil Engineering
University: Technical University of Catalunya
Date: March 1982 Qualification: Excellent cum laude

2) Title: **A finite strep formulation using Reissner-Mindlin theory for análisis of plates, bridges and axisymetric shells**
Author: Benjamín Suárez Arroyo School of Civil Engineering
University: Technical University of Catalunya
Date: June 1982 Qualification: Excellent cum laude

3) Title: **Contribution to the dynamic analysis of structures. Free vibration of bridges and axisymetric plates using the finite strip method.**
Author: Luis Pérez Vidal Facultad/Escuela: E.T.S.Ing. Industriales
University: Technical University of Catalunya
Date: July 1982 Qualification: Excellent cum laude

4) Title: **Theoretical-experimental study of the influence of transverse shear in skew slabs**
Author: Elena Blanco Díaz School of Civil Engineering
University: Technical University of Catalunya
Date: April 1986 Qualification: Excellent cum laude

5) Title: **Plastic damage models for frictional materials**
Author: Sergio Horacio Oller School of Civil Engineering
University: Technical University of Catalunya
Date: 1988 Qualification: Apto cum laude

6) Title: **Finite element Petrov-Galerkin formulation for incompressible flows**
Author: Ramón Codina School of Civil Engineering
University: Technical University of Catalunya
Date: 1989 Qualification: Apto cum laude

7) Title: **A viscous shell formulation for sheet stamping processes**
Author: Carlos Agelet de Saracibar Bosch School of Civil Engineering
University: Technical University of Catalunya
Date: 1990 Qualification: Apto cum laude

8) Title: **A finite element model for analysis of shells under static and dynamic loads**
Author: Reza Attarnejad School of Civil Engineering
University: Technical University of Catalunya
Date: June 1990 Qualification: Apto cum laude

9) Title: **Analysis of multi-layer composite shells using the finite element method**
Author: Salvador Botello Rionda School of Civil Engineering
University: Technical University of Catalunya
Date: June 1993 Qualification: Apto cum laude

10) Title: **A finite element formulation for analysis of compressible flows**
Author: J. Fernando A. Quintana School of Civil Engineering
University: Technical University of Catalunya
Date: July 1993 Qualification: Apto cum laude

11) Title: **A methodology for computer aided training in structural engineering**
Author: Fernando Escalante Echeverri School of Civil Engineering
University: Technical University of Catalunya
Date: 1993 Qualification: Apto cum laude

12) Title: **A thermo mechanical model for solidification problems in metals**
Author: Diego Javier Celentano School of Civil Engineering
University: Technical University of Catalunya
Date: 1994 Qualification: Apto cum laude

13) Title: **A finite element model for incompressible flow problems with free surface**
Author: Marcela Cruchaga School of Civil Engineering
University: Technical University of Catalunya
Date: June 1996 Qualification: Apto cum laude

14) Title: **A contribution to adaptive numerical solution of compressible flow problems**
Author: Thomas R. Fischer School of Civil Engineering
University: Technical University of Catalunya
Date: June 1996 Qualification: Apto cum laude

15) Title: **New finite element methods for elastoplastic dynamic análisis of shell structures**
Author: Patricio Cendoya Hernández School of Civil Engineering
University: Technical University of Catalunya
Date: June 1996 Qualification: Apto cum laude

16) Title: **New triangular finite element for plates and shells**
Author: José Francisco Zárate Araiza School of Civil Engineering
University: Technical University of Catalunya
Date: July 1996 Qualification: Apto cum laude

17) Title: **The critical displacement method for structural instability analysis**
Author: William M. Taylor School of Civil Engineering
University: Technical University of Catalunya
Date: September 1996 Qualification: Apto cum laude

18) Title: **Sensitivity análisis for non linear material models. Application to structural design**
Author: Luis Gil School of Civil Engineering
University: Technical University of Catalunya
Date: December 1996 Qualification: Apto cum laude

19) Title: **Non linear static and dynamic análisis of reinforced concrete structures using damage models**
Author: Dan Alexandru Hanganu School of Civil Engineering
University: Technical University of Catalunya
Date: June 1997 Qualification: Apto cum laude

20) Title: **Evolutionary methods for topology optimization**
Authora: Josefa Estupiñán School of Civil Engineering
University: Technical University of Catalunya
Date: December 1997 Qualification: Apto cum laude

21) Title: **Analysis of structural stability problems by the finite element method**
Authora: Jasmina Jovicevic School of Civil Engineering
University: Technical University of Catalunya
Date: Jan. 1998 Qualification: Apto cum laude

22) Title: **Analysis of coupled fluid-structure interaction problems in ship hydrodynamics**
Author: Julio García School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: November 1999

23) Title: **A continuum constitutive model for the análisis of composite materials**
Author: Eduardo José Car School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: March 2000

24) Title: **Development of an integrated system for geometrical modelling, mesh and data generation for finite element analysis**
Author: Ramon Ribó Rodríguez School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: March 2000

25) Title: **The finite point method in fluid dynamics**
Author: Carlos Sacco School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: March 2002

26) Title: **A meshless finite point method for elasticity problems using the finite point method**
Author: Franco Perazzo School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: February 2003

27) Title: **Secant and tangent finite element formulations for Cosserat beams**
Author: Antonio Morán School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: May 2005

28) Title: **New lagrangian formulations for analysis of the interaction between structures and fluid**
Author: Romain Aubry School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: March 2006

29) Title: **New numerical methods for analysis of fatigue life of structures with composite materials**
Author: Fernando Rastellini School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: June 2006

30) Title: **Development of finite element methods to solve coupled fluid-structure interaction problems**
Author: Pooyan Dadvand School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: July 2007

31) Title: **New numerical methods for the analysis of rigid-flexible structures under wind loading**
Author: Henrik Lynga School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: September 2007

32) Title: **Nonlinear analysis of orthotropic membrane and shell structures including fluid-structure interaction**
Author: Gerardo Valdés School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: November 2007

33) Title: **Análisis de estructuras de hormigón armado expuestas al fuego**
Author: Daniel Di Capua School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: January 2009

34) Title: **Desarrollo de redes neuronales para sistemas de ayuda a la decisión en ingeniería**
Author: Roberto López School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: January 2009

35) Title: **Modeling of Ground Excavation with the Particle Finite Element Method**
Author: Josep Mª Carbonell School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: December 2009

36) Title: **A formulation for mixture problems based on the particle finite element method**
Author: Mónica de Mier Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
University: Politécnica de Catalunya Qualification: Apto cum laude
Date: June 2010

37) Title: **Lagrangian FE methods for coupled problems in fluid mechanics**
Author: Pavel Ryzhakov Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
University: Politécnica de Catalunya Qualification: Apto cum laude
Date: July 2010

38) Title: **Regularized Maxwell equations and nodal finite elements for electromagnetic field computations in frequency domain**
Student: Rubén Otín School of Civil Engineering
University: Politécnica de Catalunya Qualification: Apto cum laude
Date: May 2011

39) Title: **Development of stabilization methods in convective transport problems using finite calculus**
Student: Prashant Nadukandi School of Civil Engineering
University: Politécnica de Catalunya Qualification: Apto cum laude
Date: May 2011

40) Title: **Formulación de elementos finitos para vigas de sección abierta en laminados compuestos**
Student: Pablo Enrique Vargas Mendoza School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: January 2012

41) Title: **Instability analysis of earth dams due to overspills by the particle finite element method**
Student: Antonia Larese De Tetto School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: July 2012

42) Title: **Particle methods for mining engineering problems**
Student: Carlos Labra School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: July 2012

43) Title: **Computational model of the human urinary bladder**
Student: Virginia Monteiro School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: June 2013

44) Title: **Development of stabilization techniques for numerical analysis of incompressible mechanics**
Student: Kazem Kamran School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: June 2013

45) Title: **On the theory of cell migration: durotaxis and chemotaxis**
Student: Xavier Diego School of Civil Engineering
University: Technical University of Catalunya Qualification: Apto cum laude
Date: July 2013

46) Title: **Aerodynamic shape optimization using adaptive remeshing**
Student: Mohammad Kouhi School of Civil Engineering
University: Technical University of Catalunya Qualification: Excellent
Date: September 2013

47) Title: **Development and applications of the Finite Point Method to compressible aerodynamics problems**
Student: Enrique Ortega School of Civil Engineering
University: Technical University of Catalunya Qualification: Excellent cum laude
Date: May 2014

48) Title: **Advances in the generation of nonstructured meshes**
Student: Abel Coll School of Civil Engineering
University: Technical University of Catalunya Qualification: Excellent cum laude
Date: July 2014

49) Title: **Finite element modelling of delamination in advanced composite beams and plates using one- and two-dimensional finite elements based on the refined zigzag theory**
Student: Ariel Eijo School of Civil Engineering
University: Technical University of Catalunya Qualification: Excellent cum laude
Date: September 2014

ON GOING Ph.D. THESES

Title: **Finite element analysis of membrane structures**
Student: Pere-Andreu Ubach de Fuentes School of Civil Engineering
University: Technical University of Catalunya

Title: **New particle and finite element methods. Applications in civil engineering**
Student: Miguel Angel Celigueta School of Civil Engineering
University: Technical University of Catalunya

Title: **New numerical methods for applications in bio-medical engineering**
Student: Eduardo Soudah School of Civil Engineering
University: Technical University of Catalunya

Title: **New computational methods for analysis of particulate flows and their effects on structures**
Student: Guillermo Casas Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

Title: **Unified Lagrangian formulation for analysis of fluid solids and their interaction with the Particle Finite Element Method**
Autor: Alessandro Franci Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

Title: **Advanced finite element method for multifracture of materials and structures**
Student: Ignasi Pouplana Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

Title: **Advanced finite element methods and particle-based methods for analysis of particulate flows in granular media**
Student: Salvador Latorre Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

Title: **A new generation of discrete and finite element methods for multidisciplinary problems in engineering**
Student: Miquel Santasusana Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

Title: **Applications of turbulence modelling in civil engineering**
Student: Jordi Cotela Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

Title: **An interactive virtual platform for simulating the human body including joint contact**
Student: Javiera Valdivia Facultad/Escuela: E.T.S.Ing. Caminos, Canales y Puertos
Universidad: Politécnica de Catalunya

RESEARCH LINES

Below are listed the main research lines of E. Oñate.

Development of innovative finite element methods (FEM) for structural analysis

Research topics in this field:

- Integration of particle-based method and finite element (FEM) for analysis of fluid-soil-interaction problems.
- Damage models for non linear FEM analysis of concrete structures.
- Finite strip method for analysis of thin prismatic structures (plates, bridges, folded plates and axysymmetric shells).
- New rotation-free shell triangles for linear and non linear analysis of structures accounting for frictional contact situations.
- New critical displacement method for fast computation of structural instability points.
- Secant-based algorithms for non linear structural mechanics.
- Finite point method for meshless analysis of solids and structures.
- Advanced mixing theory for non linear FEM analysis of composite structures.
- Finite calculus method for analysis of quasi and fully incompressible solids.
- New FEM for analysis of membrane and inflatable structures.
- Development of discrete element methods (DEM) and particle finite element methods (PFEM) for analysis of geomechanical problems.
- Combination of DEM, PFEM and FEM for analysis of underground constructions.

Relevant research outcomes:

a) New finite elements for analysis of plate and shell structures. This research is relevant for the design of many structures in civil, mechanical and aerospace structures, among other engineering areas. He has published 35 papers in JCR journals in this field. The outcome of this research is collected in several chapters of the text books "Oñate E., Structural analysis with the finite element method. Linear statics. Volume 2. Beams, plates and shells, 864 pp. Springer, 2013" and "Oñate E., Cálculo de Estructuras por el Método de los Elementos Finitos. Análisis Estático Lineal, 850 pp., CIMNE Barcelona, 1st edition, 1992, 2nd edition 1995 ".

b) Development of innovative finite element methods for analysis and optimal design of structures with standard and composite materials. The outcomes of this research are relevant for many applications to shells, buildings, dams, bridges, tunnels, harbors, geomechanics, inflatable structures and vehicle structures (cars, airplanes, trains, ships). He has published 47 papers in JCR papers in this field.

Development of FEM for industrial forming processes

Research topics in this field:
- Plastic flow formulation for analysis of metal forming processes using the FEM.
- Viscous shell approach for analysis of sheet metal stamping problems.
- Coupled thermal-mechanical formulation for hot forming problems using the FEM.
- New rotation-free shell triangles for sheet stamping problems.
- Advanced FEM and particle methods for casting problems.

Relevant research outcomes:
a) Innovative numerical methods for optimal design of manufacturing processes. This research extends the work of E. Oñate in his doctoral period for developing advanced computational procedures for application to the design and analysis of sheet metal forming, casting, forging, rolling and extrusion of metallic products. He has published 25 papers in JCR journals in this field.

b) New numerical methods for optimal design of manufacturing processes. This research extends the work of E. Oñate in his doctoral period for developing advanced computational procedures for application to the design and analysis of sheet metal forming, casting, forging, rolling and extrusion of metallic products. He has published 25 papers in JCR journals in this field.

Computational fluid dynamics and fluid-structure interaction

Research topics in this field:
- Development of finite calculus (FIC) for numerical solution of advective-convective transport and fluid flow problems.
- New particle finite element method (PFEM) for fluid flow problems using a lagrangian formulation.
- Innovative FEM for fluid-structure interaction problems
- New FEM for analysis of coupled thermal-flows.
- Development of stabilized FEM for ship hydrodynamics.
- Finite point method for meshless analysis of incompressible and compressible flows.

Relevant research outcomes:
a) Development of innovative numerical methods combining particle-based methods, discrete element methods and finite element methods for coupled problems in engineering. The methods developed by E. Oñate are relevant for solving fluid-structure interaction problems with application to harbor and marine engineering and to constructions under flooding and tsunami situations; excavation problems in civil and mining engineering. He has published 59 papers in JCR journals in this field.

   His research work in this scientific area was awarded in 2010 with an Advanced Grant of the European Research Council (ERC) for the project "New Computational Methods

for Predicting the Safety of Constructions to Water Hazards accounting for Fluid-Soil-Structure Interactions" (www.cimne.com/safecon). The Advanced Grant has a budget of 2.5 million Euros to perform research in the field during the period 2010-2015. The Advanced Grant is one of the most EC important prizes to individual researchers in Europe.

b) New stabilized finite element methods based on finite calculus for analysis of fluids and incompressible solids. This research introduces an innovative approach based on an extension of the classical infinitesimal theory in mechanics for obtaining accurate solutions in complex problems of fluid and solid mechanics. He has published 28 papers in JCR journals in this field.
c) Development of innovative numerical methods for fluid dynamics and fluid-structure interaction problems. The outcomes of this research are relevant for the study of aerodynamic and aeroelastic analysis of airplanes and flexible structures (tall buildings, slender bridges, aero generator blades); hydrodynamics and hydro-elastic analysis of ships and sailing boats; fluid-structure interaction problems with application to naval and offshore engineering and coupled thermal-flows in environmental problems. Much of this research has been developed in cooperation with and sponsorship from the Office forNaval Research (ONR) and the Naval Research laboratory (NRL) of the USA . He has published 51 papers in JCR papers in this field.
d) Modeling and simulation of the melting and burning of objects in fire situations with the particle finite element method. This research is carried out in cooperation with the National Institute of Science and Technology (NIST) of the US. The goal is the development of new computational procedures for the enhanced design of objects that are better resistant to fire events. He has published 5 papers in JCR journals in this field.

Miscellaneous topics

- Development of artificial neural network techniques and decision support systems for engineering problems: risk assessment and management of floods, maintenance of buildings, management of oil-spill situations, management of energy consumption in urban areas, etc.
- Development of wireless sensing networks (WSN) for civil engineering applications.

PROFESSIONAL ACTIVITY

Dr. Eugenio Oñate is a Civil Engineer. His activity in the last 35 years has combined in a balanced manner an academic career as Professor of Structural Mechanics at the Technical University of Catalonia (UPC), a research career in the field of numerical methods and a professional career focused on the application of numerical methods in engineering and the transfer of the results of his research to the industrial sector. His research and professional achievements in the form of innovative numerical methods and software for the analysis and design of structures, fluid dynamics and industrial manufacturing processes are internationally recognized. The practical outcomes of his scientific work are of particular relevance to the solution of multidisciplinary problems in the field of civil, industrial, aerospace, marine and naval engineering, among others.

The professional activity of E. Oñate has combined teaching, research and technology transfer as well as his participation as manager in international scientific organizations. He was the founder and Director since 1987 of CIMNE, one of the most prestigious research centers in the world in the field of computational engineering. He was a founder and first president of the Spanish Society of Numerical Methods in Engineering (SEMNI) and was also president of the European Community for Computational Mechanics in Applied Sciences (ECCOMAS) and of the International Association for Computational Mechanics (IACM). He has been a driving force behind the creation of twelve technology-based companies in Spain. These companies market worldwide the products resulting from the research at CIMNE. He has received numerous awards and honors at international level.

After completing a degree in Civil Engineering in July 1975 at the Technical Univ. of Valencia (Spain), he started postgraduate studies at the Civil Engineering Dept. of Swansea University, Wales, UK. There he completed in June 1976 a Master of Science degree (M.Sc. Thesis on Development of a finite strip method for analysis of bridges and folded plate structures) and later a Ph.D. degree (Dec. 1978) under the supervision of Prof. O. C. Zienkiewicz (Ph. D. Thesis on Plastic flow in metals with special reference to: I) Coupled thermal flow. II) Thin sheet metal forming). His Ph.D. studies were funded by an Alcoa Research Grant from USA.

In February 1979 he moved to the Technical University of Catalunya (UPC), where he was hired as an Associated Professor on Structural Mechanics at the School of Civil Engineering. He became a Full Professor with tenure on June 1983. From March 1983 to March 1989 he was the Director of the School of Civil Engineering at UPC. During that period and under his personal supervision the new premises of the Civil Engineering School (≈20.000 m2) were designed and built in the new campus of UPC.

On March 1987 he founded CIMNE (International Center for Numerical Methods in Engineering, www.cimne.com), a research center specialized in the development and application of numerical methods in engineering. Since 1987 he is the Executive Vice-President and Director of CIMNE. This center has grown to employ some 180 scientists and engineers from 25 different countries worldwide specialized in research activities in

different fields of engineering and science (civil, mechanical, aerospace and naval engineering, bio-medical engineering, food engineering, etc.). CIMNE has received many prestigious Awards in Cataluña and by the European Commission.

In 2002 he created the CIMNE Classroom Network. The CIMNE Classrooms are physical spaces jointly created by CIMNE and a University for the development of training, research and technology transfer activities (see www.cimne.com for further details). The CIMNE Classroom Network incorporates nowadays 24 centers created between CIMNE and universities in Spain and in several Latin American countries (Argentina, Mexico, Chile, Peru, Colombia, Brazil, Cuba and Venezuela). The CIMNE Classrooms are a unique instrument for scientific and technical cooperation between research, academic and industrial organizations in Europe and Latin-American.

He has supervised **49 Ph.D. Thesis and 57 Master Thesis**. 30 of his former students are now full professors in Universities in Spain (13), USA (4), UK (2) and Latin America (11). He has had a significant impact in the creation of new scientific groups in cooperation with his former students.

In 1989 he was the founder and first President of the Spanish Association for Numerical Methods in Engineering (SEMNI, www.cimne.upc.es/semni). Under his presidency (1989-2004) SEMNI became the largest association in Europe in the field of Numerical Methods in Engineering. SEMNI has organized 8 congresses in the field. On June 2004 he was appointed Honorary President of SEMNI.

In July 2005 he was appointed Honorary Member of the Portuguese Association of Theoretical, Applied and Computational Mechanics (APMTAC) in recognition of his work towards the cooperation of APMTAC and SEMNI. We note his initiative to merge the APMTAC and SEMNI conferences that are jointly held bi-annually since 1983 and typically attract some 400 scientists and engineers.

He was one of the founders and first Vice-President (1993-95) of the European Community on Computational Methods in Applied Sciences (ECCOMAS, www.eccomas.org). In the period 2000 - 2004 he was the President of ECCOMAS. On September 2000 he organized the third ECCOMAS Congress in Barcelona which attracted some 1500 participants.

In the period 1994-2002 he was the Secretary General of the International Association for Computational Mechanics (IACM, www.iacm.info). From 2002-2010 he was the President of the IACM. On July 2006 he was re-elected as President of the IACM for a four year period (he has been the only president of the IACM who has been re-elected). During his mandate as Secretary General and President of IACM he supervised the organization of the World Congresses of Computational Mechanics (WCCM) of the IACM held in Tokyo (1994), Buenos Aires (1998), Vienna (2002), Peking (2004), Los Angeles (2006), Venice (2008) and Sidney (2010). The next WCCM will be take place in Barcelona (Spain) on 20-25 July 2014 under the chairmanship of E. Oñate, some 4000 participants are expected to attend this

congress (http://www.wccm-eccm-ecfd2014.org). In 2010 he was appointed permanent member (with full voting rights) of the Executive Council of the IACM.

His professional activities have spread over a range of multidisciplinary fields which he has contributed relevant theories and methods of practical relevance. His key professional contributions are the following:

- Development of numerical methods for studying the safety of constructions against water. Application to the stability of dams in ports under large wave's and to the safety of infrastructures (dams, bridges, buildings, etc.) during flooding and tsunamis. This technology is marketed in Spain by COMPASS Ingeniería y Sistemas S.A. (www.compassis.com).

- Development of new technologies for design and analysis of inflatable structures formed by low pressure tubes of new polymer materials. Application to mobile pavilions for exhibitions, hospitals and emergency shelters; airplane hangars and high strength mobile inflatable bridges allowing the pass of traffic. This inflatable structure technology is been exploited worldwide by the Spanish company Buildair Ingeniería y Arquitectura S.A. (www.buildair.com).

- Development of innovative simulation methods for analysis of solids and structures with standard and composite material. Applications to the analysis and design of shells, buildings, dams, bridges, tunnels, harbour structures, inflatable structures, geomechanical problems, vehicle structures (cars, airplanes, trains, ships). The outcome of this research is the structural analysis code RamSeries marketed by the Spanish company COMPASS Ingeniería y Sistemas S.A(www.compassis.com).

- Development of innovative numerical methods for analysis and design of manufacturing processes. Applications to sheet metal forming and casting processes, forging, machining and extrusion of metallic products. The outcomes of this research are the software codes STAMPACK (sheet metal forming), VULCAN and Click2Cast (casting) marketed by the Spanish company QUANTECH ATZ S.A. (www.quantech.es).

- Development of innovative numerical methods for fluid dynamics and fluid-structure interaction problems. Applications to the study of the safety of constructions in water hazards, aerodynamic and aeroelastic analysis of airplanes and flexible structures (tall buildings, slender bridges, aero generator blades); hydrodynamics and hydro-elastic analysis of ships and sailing boats; fluid-structure interaction problems with application to naval and offshore engineering and coupled thermal-flows in environmental problems. Much of this research has been developed under sponsorship from the Office for Naval Research (ONR) and the Naval Research Laboratory (NRL) of the United States of America (USA) . The outcome of this research has been collected in the code Tdyn marketed by the Spanish company COMPASS Ingeniería y Sistemas S.A (www.compassis.com).

- Development of decision support systems integrating data-bases, numerical methods, wireless sensor and activators, and artificial intelligence techniques. Applications to the risk prediction and management of floods (Ramflood code, www.cimne.com/ramflood) and sea spills (Spillrec code) and bio-medical engineering and to the management of energy consumption in cities (Energy Information System, SIE). The outcome of this research is marketed by the Spanish companies COMPASS Ingeniería y Sistemas S.A., QUANTECH ATZ S.A. and CIMNE Tecnología SA. (www.cimnetecnologia.com).

- Development of new web-based technology for e-learning and e-work. The outcome of this research is collected in the collaborative work platform Fraktalis (www.cimne.com/fraktalis) and the Virtual Training Center marketed by the Spanish company STRUCTURALIA (www.structuralia.com).

The above research lines have been developed in the framework of over **400 RTD projects** carried out in cooperation with the main engineering companies in Spain and worldwide. Some **140** of these projects have been developed in the framework of EC programmes.

The numerical methods and software he has developed for structural analysis have had a significant impact for the enhanced analysis and design of reinforced concrete and composite structures, large scale inflatable structures (inflatable hangars and bridges, etc.), as well as for the optimum design of industrial sheet forming processes.

In addition, to this RTD activity he has developed an intensive task in the transfer of the outcome of his research to the industrial sector, and in particular to Spanish companies, with the aim of improving their manufacturing processes and products with the help of advanced numerical simulation codes.

We mention his personal involvement in the creation of twelve spin-off companies that operate with success in the international market. Among these we note the following: QUANTECH ATZ, S.A. (1996), specialized in the marketing of software and engineering services for the metal forming and aeronautic sectors (www.quantech.es); STRUCTURALIA, S.A. (2000), specialized in internet services for the construction sector (www.structuralia.com); COMPASS, Ingeniería y Sistemas, S.A. (www.compassis.com) (2002), specialized in the marketing of software and engineering services in the civil and naval sectors; BUILDAIR, Ingeniería y Arquitectura, S.A. (www.buildair.com) (2003), specialized in analysis and design of inflatable structures such as airplane hangars, inflatable bridges, emergency and exhibition pavilions, etc; INGENIA AIE (www.ingenia.aero) (2003), specialized in engineering services for the aeronautic sector and NHIT, S. A. (2003), specialized in transfer of knowledge in computational methods to the industrial sector. NHIT S.L. (2009). Transfer and application of computational technology to industry.

In 2011 he created CIMNE Tecnología. S.A. specialized in the transfer to industry of the products developed at CIMNE. In the period 2011-2013 this company has created, or taken part as a shared holder, in several other spin-off companies from CIMNE such as: BUILDAIR Asia-Pacific Inc, specialized in promoting inflatable structures technology in

Asia, Computational and Information Technologies S.A., specialized in the development and market of software and information systems for engineering applications. LYNCOS S.L., specialized in the Internet of Things (www.lhings.com); Servicios Energéticos Avanzados S.L. specialized in energy management in buildings (www.inergybcn.com) and Tecnologías Avanzadas para el Ocio (TAOC S.L.), specialized in the application of information tecnologies in the tourism and leisure sector (www.beaching.com). For more information visit www.cimnetecnologia.com

The mentioned companies market worldwide several products related to the research carried out at CIMNE. These include the Tdyn code for fluid-dynamic analysis, the structural analysis code RamSeries, the metal forming simulation codes Stampack, Vulcan and Click2Cast, the Ramflood code for risk analysis and management of floods, the SIE code for energy management in buildings, a Collaborative Work Platform and a Virtual Training Center and several designs of inflatable structures for applications in civil engineering and architecture.

The CIMNE spin-off companies promoted by E. Oñate employ some 92 workers, including 15 Post-Docs.

RELEVANT CONTRACTS WITH COMPANIES AND/OR ADMINISTRATIONS

Scientist in charge: Eugenio Oñate Ibáñez de Navarra

Project Title	**Funded by**	**Starting Date**	**Ending Date**	**Budget (in K Euros)**
Development of an integrated methodology for linear and non linear structural analysis	CICYT Project Nº PR-841132CO302	May 1984	May 1987	100
Numerical análisis of the Navier-Stokes and Euler equations in aerodynamics	CICYT Ref. PB 87/0504	Jan. 1988	Jan. 1990	80
Numerical análisis of sheet stamping processes	CICYT Ref. PB 87.0603	Feb. 1988	Feb. 1991	60
Development of computer aided methods for industrial sheet stamping processes	PETRI (PTR 89-0145)	Jan. 1989	Jan. 1992	50
Development of an unstructured grid based computer software system for 2D and 3D aerodynamics design	EC-BRITE P-2435 (FP3)	June 1989	June 1992	200
Numerical simulation of industrial sheet metal forming processes	EC Programme BRITE P-2029 (FP3)	Jan. 1989	Jan. 1993	280
Development of educational software for engineering education and training	EC-COMETT P-5387Cc (FP3)	Jan. 1989	Jan. 1993	300
Analysis of the safety of concrete dams under dynamic loads	ENHER OCIDE	Apr.1989	Apr.1993	230
The development of multimedia distance learning package for finite element education and training	EC-COMETT II P-263/D (FP3)	Jan. 1993	July 1993	180
Improvement of higher education and training in computational mechanics in Poland	EC-TEMPUS P-JEP-369 (FP3)	Nov. 1992	August 1993	200

Numerical simulation of hot rolling and sheet stamping processes	Mº Industria (Prog. PAUTA)	July 1991	Dec. 1993	180
Numerical simulation of crash-worthiness problems using parallel computing	Mº Industria (Prog. PAUTA)	Jan. 1992	Dec. 1993	210
Development of numerical methods for analysis of separation and stagnation zone in the Hermes shuttle	Aviones Marcel-Dassault (Project Hermes)RD/ANE88	Jan. 1990	Jan. 1994	90
Structural analysis of a containent shell structure in Vandellós II nuclear power plant	Asoc.Nuclear Vandellós	May 1993	Jan. 1994	70
Development of an User-Oriented CAE system for simulating the casting of ductile iron parts	EC-BRITE Euram P-BE-4596 (FP4)	April 1990	April 1994	250
Prediction of non linear and structural behaviour using parallel computing methods	EC-BRITE-Euram P-BREU-CT91-9431 (FP4)	Jan. 1992 (TSTS)	Feb. 1995	180
Development of a methodology for linking CAD data with finite element codes	CICYT P-TAP93-0964	May 1993	May 1995	75
Development of a computer aided methodology for enhanced design of axial and centrifugal fans	EC-BRITE Euram P-BE-5076 (FP4)	Nov. 1992	Nov. 1995	230
Development of a decission support system for predicting wear in bulk and sheet forming operations	EC-BRITE Euram P-BE-5248-92 (FP4)	Nov.1992	Nov.1996	190
Development of finite element methods for solidification and cooling in casting	Mº Industria (Prog. PATI)	Jan. 1995	Dec.1996	120
Computer simulation of casting processes	REGIENOV (Renault, Paris France)	Jan. 1990 Jan. 1995	Jan. 1993 Dec. 1996	90 110
Development of computational methods for high speed flows	NASA	Dec.1993	Dec.1996	90
Improvement of higher education and training in computational mechanics in Poland	EC-TEMPUS P-JEP-7065/94 (FP4)	Oct.1994	Oct.1997	90

Enhanced design of high gear pumps using environmentaly acceptable hydraulic fluids	EC-BRITE-Euram P-BE/95-1046	Dec.1995	Dec.1998	230
Development of parallel computing techniques for analysis of sheet stamping processes (STAMPAR)	EC-Esprit P-21037 (FP4)	March 1996	Dec.1998	140
Development and dissemination of educational software and courses for continuing active training in computer aided engineering	EC-Leonardo P-1049	Feb.1996	Jan. 1999	90
Development of parallel computing techniques for sheet stamping processes	CICYT P-TIC-96-1019	June 1996	June 1999	60
Optimisation of service life of production tools in hot forging, die casting and glass forming by minimizing the risks due to thermal fatigue	EC-BRITE-Euram P-BE96-3922 (FP4)	Sept.1996	Sept.2000	240
New methodologies for design and manufacturing of inflated structures (INFLAST)	EC-BRITE-Euram P-BE96-3015 (FP4)	Sept.1996	Sept.2000	210
Development of a computer based system for enhanced seakeeping and structural ship design (SHEAKS)	EC BRPR-CT-97-0605	Dec. 1997	Dec. 2000	210
HPCN tools for enhanced hydrodynamic design of fast ships on parallel computing platforms (FLASH)	EC-Esprit 24903 (FP4)	Oct.1997	April 2000	180
Integrated expert system for analysis of ship collision	Mº Industria Atyca P54/1997	Jan. 1997	Dec. 1997	150
Computer aided system for design of sails	Mº Industria Atyca PO316/1997	Jan. 1997	Dec. 1997	115
An informatic system for hydrodynamic design of ships	Mº Industria Atyca P341/1997	Jan. 1997	Dec. 1997	150
Enhanced design environment for industrial casting processes on parallel computing platforms (DECAST)	EC-Esprit 28144 (FP4)	Oct. 1998	June 2001	115

Enhanced computer-based design and promotion of sheet stamping dies (PRODIES)	EC-CRAFT BES2-5536 (FP5)	Oct. 1998	Sept. 2000	130
Enhanced design and manufacturing of high resistance casted parts (DARCAST)	EC-CRAFT BRST-CT-98-5328 (FP5)	Nov.1998	October 2000	150
Enhanced design and production of wear resistant rock cutting tools for construction machinery (CUTTER)	EC-Growth (FP5)	Jan. 2000	Dec. 2002	300
Development of a modular open-platform and tools for personalized learning in computational engineering methods (MOPLE)	EC-IST Prog. (FP5)	Jan. 2000	Dec. 2001	280
Enhanced design and manufacturing of mini-hydraulic products (MINIHAP)	EC-Growth (FP5)	Feb. 2000	Dec. 2002	250
A validated simulation support system for the optimal design of steel shaped can manufacturing processes (SCANMAP)	EC-Growth (FP5)	Jan. 2000	Dec. 2002	100
Functional design and optimisation of ship hull forms (FANTASTIC)	EC-Growth (FP5)	Jan. 2000	Dec. 2002	180
Design and demonstration of highly reliable low Nox combustion systems for gas turbines (DESIRE)	EC-Growth (FP5)	Feb. 2002	Jan. 2005	250
Prospective study on the state of the art of multidisciplinary modelling, simulation and validation in aeronautics (PROMUVAL)	EC-Growth GMA-2002-72158 (FP5)	Dec. 2002	May 2004	75
Decision support system for risk assessment and management of floods (RAMFLOOD)	EC-IST IST-2001-37581	Jan. 2003	Dec. 2004	425
Rear fuselaje and empennage flow investigation (REMFI)	EC-FP6	Dec.2003	Nov. 2004	140
Economical exploitation of polymer coated steel sheet in large-scale production of new can types by the European can industry (POLYCOAT)	EC-FP6	Dec.2003	Nov. 2004	180
Grid based decision support system for assisting clinical diagnosis and interventions in cardiovascular problems (DISHEART)	EC-FP6	Jan. 2005	Dec.2006	350

Finite element methods for aeroelastic analysis of rigid flexible structures (ADEL)	CICYT	Jan. 2003	Dec. 2005	120
Development of finite element methods for analysis of cardio-vascular problems	CICYT	Jan. 2005	Dec. 2007	130
New design and manufacturing processes for high pressure fluid power products (PROHIPP)	EC-FP6	Jan. 2005	Dec. 2009	300
Technology Innovation in underground construction (TUNCONSTRUCT)	IP-EC	Sept.2005	Oct.2009	250
Multiscale reinforcement of semi-crystalline thermoplastic sheets and honeycombs (MRECT)	EC (FP7)	Apr.2010	Apr.2010	277
Development of a method for studying the failure process of rockfill embankment dams combining finite element and particle techniques (XPRES)	MEC	Oct.2007	Sept.2010	179
Numerical and experimental techniques for safety assessment and protection of embankment dams in overtopping scenarios (e-DAMS)	MICINN	Jan.2011	Dec.2013	49
Real time computational mechanics techniques for multi-fluid problems (HFLUIDS)	MICINN	Jan.2011	Dec.2013	99
New computational methods for predicting the security of constructions to water hazards accounting for fluid-soil-structure interactions (SAFECON)	EC (FP7)	Jan.2011	Dec.2015	2500
Manipulation of Reynolds stress for separation control and drag reduction (MARS)	EC (FP7)	Oct.2010	Sept.2013	269
Greener aeronautics international networking (GRAIN)	EC (FP7)	Jan.2011	Dec.2013	99
Numerical methods and tools for key exascale computing challenges in engineering and applied sciences (NUMEXAS)	EC (FP7)	Jan.2013	Sept.2016	436

Visual Analysis for Extremely Large-Scale Scientific Computing (VELaSSCo)	EC (FP7)	Jan.2014	Dec.2016	411

Total Projects: 61

Total Budget: 13,474 million Euros

Note: Budget in all projects refers to the participation of E. Oñate's group.

COMPANIES AND ORGANISATIONS WHICH E. OÑATE HAS COLLABORATED WITH

Below is the list of organisations and companies with which E. Oñate has collaborated under contract in the framework of research, development and technology transfer projects:

ORGANISATIONS

Autonomous University of Barcelona
Centre d'Informació i Desenvolupament Empresarial (Cidem)
Ciemat
Comissionat per a la Societat de la informació
European Community
Fundació Catalana per a la Recerca
Generalitat de Catalunya
Generalitat de València
George Mason University (USA)
Institut Cartogràfic de Catalunya
Institut Català d'Energia
Institut Català del Sòl
Instituto Nacional de Técnica Aerospacial
Ministerio de Educación y Cultura
Ministerio de Fomento
Ministerio de Industria y Energía
Ministerio de Defensa
Ministerio de Obras Públicas y Transporte
National Technical University of Athens (Greece)
Unesco
Technical University of Catalunya
Technical University of Madrid
University of Barcelona
University of Cantabria
University of Valencia

COMPANIES

AGROMAN, S.A.
ALFREDO CARDOSO, S.L. (Portugal)
AMES, S.A.
ARGOMM, S.P.A. (Italy)
ASCAMM
ASOS. NUCLEAR DE ASCO, AIE
ASOS. NUCLEAR VANDELLOS
ATIPIC
AUTOPISTAS CONC. ESPAÑOLA, S.A.
AUXINI, S.A.
AVIONS M. DASSAULT (F)
BUILD AIR S.A.
CADESA
CANAL DE EL PARDO
CANDEMAT, S.A.
CANTERAS SAN ANDRES, S.A.
CARLOS FERNÁNDEZ CASADO, S.L.
CASA, S.A.
CAST, S.A.
CEA-IFAC
CEBAL-ENTEC
CEDEX
CEN/SCK (B)
CEP IBERICA, S.A.
CINSA
INARSA
INGENIA
INFRAES, S.A.
INME/NASA (UK)
INSTITUT CARTOGRÀFIC DE CATALUNYA
INTECASA
ITEL TELECOMUNICAZIONI, S.R.L.
IZAR S.A.
J.A. TORROJA-OF. TECNICA, S.A.
LABEIN
LOSTEC, S.A.
MADESA
MARIN INGENIERÍA, S.L.
MASTER, S.A.
MATRIX, S.A.
METALOGENIA, S.A.
METALPACK, S.A.
MIKALOR, S.A.
O.C.P. CONSTRUCCIONES
OBRAS Y SERVICIOS HISPANIA, S.A.
OCISA
OFEP, S.A.
OFITECO Y GEOS-UTE
OFITECO-INTRAESA, UTE
PAYMA, S.A.

COMPASS. Ingeniería y Sistemas,S.A.
COMSA
COPCISA
COVIT, S.A.
CTT-STRONGHOLD
DECAD INGENIERÍA INTEGRAL, S.A.
DRAGADOS CONSTRUC. P.O., S.A.
DRAGADOS OBRAS Y PROYECTOS, S.A.
ECOTECNIA
EMP. NAL. DE RESID. RADIOACTIVOS
EMPRESA NACIONAL BAZAN
EMSSA
ENASA
ENHER
EOVAL/UTE
EPTISA
EQUIP. NUCLEARES, SA/AUXINI, S.A.
ESTEYCO
EUROGEONTECNICA, S.A.
EUROPROJECT, S.A.
FARGUELL, S.A.
FAROBEL, S.A.
FCC CONSTRUCCIÓN S.A.
FOMENTO DE CONS. Y CONTRATAS, S.A.
FORMO UNICON, S.A.
FREYSSINET, S.A.
FUCHS PETROLEUH A.G. (D)
FUNDACIÓN INASMET
FUNDICIONES MIGUEL ROS, S.A.
GERC
GEOCONSULTING, S.A.
GEOTEYCO, S.A.
GESTIÓ D'INFRASTRUCTURES, S.A.
GRANTECAN, S.A.
HIDRURSA, S.L.
HIPERCOR, S.A.
HORMIGONES PROYECTADOS, S.A.
HORMIPRESA
IDIADA
IDOM INGENIERÍA Y SISTEMAS, S.A.
IKERKAN, S. COOP. LTD
PCG HIDRAULICS, LTD. (UK)
PEDELTA, S.A.
PEDRO ROQUET, S.A.
PRAINSA
PREFABRICADOS ALVI, S.A.
PROYECTOS Y SERVICIOS, S.A.
PUERTO AUTONOMO DE BILBAO
PUJOL, S.A.
QUANTECH ATZ, S.A.
REGIENOV/RENAULT (F)
RELSA
REMOTE SESING EUROPEO, S.A.
RENFE
RESEARCH AND CONCRETE, S.A.
ROCKFIELD SOFTWARE, LTD (UK)
RODIO CIMENTACIONES ESPEC, S.A.
RUBAU TARRES-OCP CONST. UTE
SATO
SENER, S.A.
SERRA AERONÁUTICA
SIMO, S.A.
SOLER Y PALAU, S.A.
SOME, S.A.
SORIGUE, S.A.
STATING, S.A.
STRUCTURALIA
SUBEROLITA, S.A.
SWEDISH NUCLEAR POWER INSPECTORATE (ski) (S)
TABASA
TALLERES DAUMAR, S.A.
TECN. GRUPO INI, S.A.
TERMICAS DEL BESOS, S.A.
TONI TIÓ VELAS, S.A.
TRAVIPOS, S.A.
UBENA BBS, S.L.
VICRUSA
VIEWTECH AS
ZANINI, S.A.
ZENTRUM FERTIGUNESTECHNIK STUTTGART (D)

RELATIONSHIP OF E. OÑATE WITH LATIN AMERICA

E. Oñate has promoted different cooperation activities with groups of Universities in Latin America.

Stands out the collaboration with different Universities and research centers in Mexico, Argentina, Chile, Brazil, Colombia, Perú and Venezuela with which he has been developing joint research, education and professional activities for years.

As an example, some of the activities in Argentina, Mexico, Chile, Colombia, Venezuela, Brazil and Cuba are listed below.

Activities in Argentina

- Plenary lecturer in several congresses organized by the Argentinian Association of Computational Mechanics (Santa Fe 1996, Bariloche 2000, Bahía Blanca 2003, Buenos Aires 2010).
- Co-Chairman of IV World Congress on Computational Mechanics (Buenos Aires, 1998).
- Founder of the CIMNE Classrooms at the Universities of Santa Fe (2000), Tucuman (2001), Cordoba (2002), Salta (2008) and Rosario (2013).
- Medal of the Argentinian Association of Computational Mechanics (2000)
- Argentinian Award "Dr. Luis Federico Leloir" to the International Cooperation in Science, Technology and Innovation, 2013

Activities in Brazil

- Lecturer in a course on Linear and Non linear Structural Analysis using the Finite Element Method, University of Belo Horizonte, Minas Gerais (1995)
- Founder of a CIMNE Classroom at the University of Uberlandia (2004)
- Founder of a CIMNE Classroom at the Istituto Federal de Educaçao, Ciência e Tecnologia of Sao Paulo (2009).

Activities in Chile

- Chairman of the I International Congress of Numerical Methods in Engineering and Applied Sciences (Concepcion, Nov. 1992).
- Plenary speaker in different congresses organised by the Chilenian Association for Numerical Methods in Engineering (Santiago, 1996, 2002).
- Founder of CIMNE Classroom at the University of Valparaiso (2004).

Activities in Colombia

- Lecturer in a course on finite element methods at Universidad de Los Andes (1986)
- Founder of CIMNE Classroom at the University of Los Andes (2003)
- Founder of CIMNE Classroom at the University of Manizales (2004)

Activities in Cuba

- Founder of the CIMNE Classroom at the University Central "Martha Abreu" of Las Villas (2003)
- Doctor Honoris Causa, Universidad "Martha Abreu", Las Villas, Cuba (2013)

Activities in El Salvador

- Founder of the CIMNE Classroom at the University Centroamericana "José Simeón Cañas" UCA (2009).

Activities in Guatemala

- Founder of the CIMNE Classroom at the University Mariano Gálvez (UMG) (2011)

Activities in Mexico

- Lectures at different institutions of Mexico:
  - Autonomous University of Mexico, November 1994
  - Mexican Institute of Transportation, Queretano, November 1994
  - University of Guanajuato, May 1996
  - Technological Institute of Monterrey, Jan. 2000
- Promoter and fundational member for the creation of the Mexican Association of Numerical Methods in Engineering (www.cimat.mx/smmni). Created in the University of Guanajuato on January 19th, 2002.
- Promoter for the organisations of the following congresses in Mexico:
  II International Congress of Numerical Methods in Engineering and Applied Sciences. Guanajuato, 17-19 Jan. 2002
  III International Congress of Numerical Methods in Engineering and Applied Sciences, Monterrey, 22-24 Jan. 2004
- Founder and co-director of a CIMNE Classroom at the University of Guanajuato, created on January 2002.
- Founder and co-director of a CIMNE Classroom at the Technological Institute of Monterrey, January 2004

Activities in Peru

- Founder of the CIMNE Classroom at the University Católica of Perú (2009)

Activities in Venezuela

- Founder of the CIMNE Classroom at the University Central of Venezuela (2001)
- Founder of the CIMNE Classroom at the University Centroccidental "Lisandro Alvarado" (UCLA) (2008)
- Founder of the CIMNE Classroom at the University of Carabobo (2009)
- Plenary Speaker at the X Int. Conference on Numerical Methods in Engineering and Applied Sciences (CIMENICS'2010), held in Mérida from 22 to 24 March 2010.

ORGANIZED CONFERENCES

Below is a list of conferences organized by E. Oñate in collaboration with other Spanish and foreign scientists. In all of them he has been Chairman or Co-Chairman.

XI World Congress on Computational Mechanics (WCCM XI), 20-25 July 2014, Barcelona, Spain

VI International Conference on Textile Composites and Inflatable Structures - Structural Membranes 2013, 9 - 11 October 2013, Munich, Germany

III International Conference on Particle-Based Methods (PARTICLES 2013), Stuttgart, Germany, 18-20 September 2013

XII International Conference on Computational Plasticity (COMPLAS 2013), Barcelona, Spain, 3-5 September 2013

V International Conference on Computational Methods in Marine Engineering (MARINE 2013), 29 - 30 May 2013, Hamburg, Germany

V International Conference on Textile Composites and Inflatable Structures - Structural Membranes 2011, 5 - 7 October 2011, Barcelona, Spain

IV International Conference on Computational Methods in Marine , 28 - 30 September 2011, Lisbon, Portugal

Computational Methods for Coupled Problems in Science and Engineering - COUPLED PROBLEMS 2011, 20 - 22 June 2011, Kos Island, Greece

XI International Conference on Computational Plasticity (COMPLAS 2011), Barcelona, Spain, 7-9 September 2011

5th Conference on Advances and Applications of GiD & 1st Kratos Workshop, Barcelona, Spain, 26-27 May 2010

International Conference on Particle-Based methods, Barcelona, Spain, 25-27 November 2009

IV International Conference on Textile Composites and Inflatable Structures (Structural Membranes 2009), Stuttgart, Germany, 5-7 October 2009

X International Conference on Computational Plasticity (COMPLAS 2009), Barcelona, Spain, 2-4 September 2009

Computational Methods in Marine Engineering (Marine 2009), Trondheim, Norway, 15-17 June, 2009

Computational Methods for Coupled Problems in Science and Engineering, Ischia Island, Italy, 8-11 June, 2009

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IX International Conference on Computational Plasticity (COMPLAS 2007), Barcelona, Spain, 5-7 September 2007

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PARTICIPATION IN EDITORIAL BOARDS IN JOURNALS

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- Mechanics of Advanced Materials and Structures (J. N. Reddy, USA)
- International Review of Mechanical Engineering (Praise Worthy Prize)
- Interaction and Multiscale Mechanics: an International Journal (J. S. Chen, USA)
- Journal of Mathematics in Industry (Springer)
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- Advanced Modelling and Simulation in Engineering Sciences (Springer)
- International Journal for Numerical Methods in Biomedical Engineering (J. Wiley)
- Journal of Sailboat Technology (The Society of Naval Architects and Marine Engineers)
- Latin American Journal of Solids and Structures (Brazil)
- Journal of Computational Particle Mechanics (Springer)
- International Journal of Modern Mechanics (ScienTech)
- International Journal for Multiscale Computational Engineering (Begell House Journals)

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PUBLICATIONS

SUMMARY OF PUBLICATIONS

4 text books written	4 edited international journals
53 edited books	62 chapters in books
46 monographs with ISBN	306 papers in JCR journals
437 papers in conference proceedings	3 books translated into English
230 research publications	3 book series edited

Total nº of publications: 1148 h factor = 37 Nº of citations: 5.213

Chief Editor of three international journals:

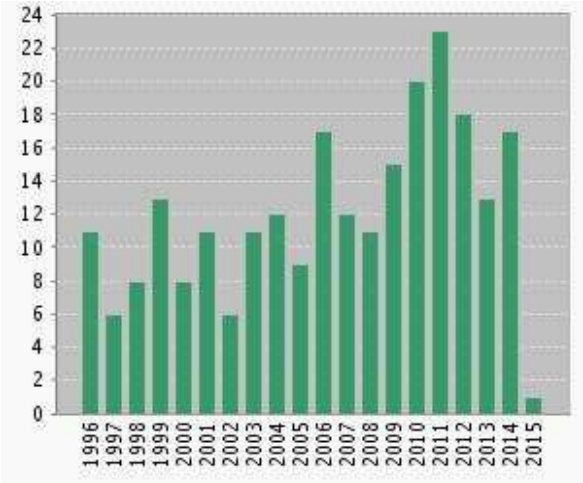
- Archives of Computational Methods in Engineering. Edited by M. Kleiber and E. Oñate, since 1994. Published by Springer. 5 years Impact factor: 3.576
- Revista Internacional de Métodos Numéricos para Cálculo y Diseño en Ingeniería. Edited by E. Oñate and S. Idelsohn, since 1985. Published by Elsevier. Recently compiled in JCR (2010). 5 years Impact factor: 0.170
- Computational Particle Mechanics. Edited by T. Zohdi, E. Oñate and P. Wriggers. Published by Springer. Starting in January 2014.
- He has 2 papers with more than 200 citations, 5 papers with more than 100 citations, 18 papers with more than 50 citations and 63 papers with more than 20 citations.

JCR JOURNALS WHERE HE HAS PUBLISHED FIVE OR MORE PAPERS

- Int. Journal for Numerical Methods in Engineering (51 papers), Computer Methods in Applied Mechanics and Engineering (39 papers), Int. Journal of Numerical Methods for Analysis and Design in Engineering (in Spanish) (26 papers), Computational Mechanics (25 papers), Engineering Computations (18 papers), Computers and Structures (14 papers), Journal of Solids and Structures (8 papers), Communications in Numerical Methods in Engng. (6 papers), Journal of Materials Processing Technology (5 papers).

NUMBER OF PAPERS IN JCR JOURNALS AND CITATIONS PER YEAR (1996 - 2015) (Source: ISI web of knowledge)

Nº of papers/year



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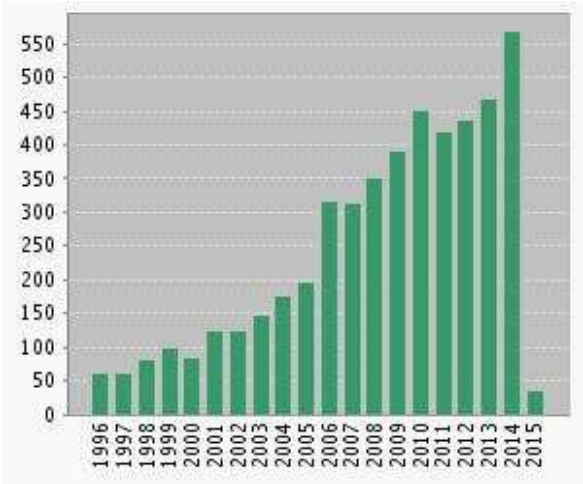

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English Editor: McGraw-Hill. London
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