

## PERSONAL INFORMATION

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**NAME** SPYROS  
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## CURRENT POSITION

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**10.2014 -present** **Professor of Computational Structural Mechanics and Finite Elements**  
 Department of Mechanical Engineering, University of Thessaly, Volos, Greece

## PREVIOUS POSITIONS

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**08.2016 - 09.2019** **Professor and Chair of Structural Engineering** [part-time appointment, in parallel with U Thessaly], School of Engineering, The University of Edinburgh, Scotland, UK  
**05.1999 -09.2014** **Lecturer, Assistant Professor and Associate Professor in Computational Structural Mechanics and Finite Elements**  
 Department of Mechanical Engineering, University of Thessaly, Volos, Greece  
**11.1996 -05.1999** **Structural Design Engineer**  
 Egnatia Odos S.A., Thessaloniki, Greece  
**01.1996 -11.1996** **Post-Doctoral Fellow**  
 Steel Structures Stevin Lab, Civil Engineering, Delft University of Technology, The Netherlands  
**01.1994 -12.1995** **Military Service – Petty Officer**  
 Mandatory service (23 months), Hellenic Navy, Athens, Greece  
**09.1989 -12.1993** **Graduate Research and Teaching Assistant**  
 Department of Civil Engineering, The University of Texas at Austin, USA

## EDUCATION

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**09.1991- 12.1993** Ph.D. in Structural Mechanics, Department of Civil Engineering, The University of Texas at Austin, USA [*Stability of Tubes Under External Pressure and Structural Loads*]  
**09.1989 - 08.1991** M.Sc. in Structural Engineering, Department of Civil Engineering, The University of Texas at Austin, USA [*Stability of Deep-Water Pipelines Under Combined Loading*]  
**09.1984 - 07.1989** Diploma (5-year degree) in Civil Engineering, National Technical University of Athens, Greece (Highest Honors, 1st out of 350 students) [*Geometrical Nonlinear and Elastic-Plastic Analysis of Three-dimensional Frames. Computational Solution Techniques*]

## TEACHING

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**1999 - present** Mechanical Engineering, U Thessaly, Faculty Member (presently Professor), Undergrad Courses: *Mechanics-Statics* (1<sup>st</sup> year), *Finite Elements* (3<sup>rd</sup> year), *Structural Mechanics* (elective, 5<sup>th</sup> year)  
**1999 - present** Mechanical Engineering, U Thessaly, Faculty Member (presently Professor), Graduate Courses: *Advanced Finite Elements, Structural Stability, Mechanical Behavior and Design of Hydrocarbon Pipelines, Structural Design of Energy Infrastructure Systems*  
**2015 - present** School of Naval Architecture & Marine Engineering, NTU Athens (Visiting Professor), Graduate Course: *Structural Behavior and Design of Marine Pipelines*  
**2016 - 2019** School of Engineering, The University of Edinburgh (Professor and Chair), Undergrad Courses: *Finite Elements in Solids and Structures* (4<sup>th</sup> year), *Structural Mechanics* (2<sup>nd</sup> year)

## US PATENT

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**2020** Keil, B. D. and Karamanos, S. A., SEISMIC PIPE JOINT, US Patent Provisional Application No. 62/884,638; May 1, 2020.

**BOOK (EDITOR)**

- 2020** Karamanos, S. A., Gresnigt, A. M., Dijkstra, G. J., *Geohazards and Pipelines, State-of-the-art design using experimental, numerical and analytical methodologies*, Springer Nature, Cham, Switzerland, 175 pages, in press, 2020 <https://www.springer.com/gp/book/9783030498917>

**PUBLICATIONS (REPRESENTATIVE JOURNAL PAPERS, PARTIAL LIST)**

- [1] Karamanos, S. A., Romeijn, A. and Wardenier, J. (2000), "Stress Concentrations in Tubular Gap K-joints: Mechanics & Fatigue Design", *Engineering Structures*, **22**(1) 4-14, [DOI](#).
- [2] Karamanos, S. A. (2002), "Bending Instabilities of Elastic Tubes", *Int J Solids & Structures*, **39**(8) 2059-2085, [DOI](#).
- [3] Karamanos, S. A., Tsouvalas, D. and Gresnigt, A. M. (2006), "Ultimate Bending Capacity and Buckling of Pressurized 90 deg Steel Elbows", *J. Pressure Vessel Technology*, ASME, **128**(3) 348-356 [[Sam Y. Zamrik Literature Award](#) 2006, ASME, PVP Division], [DOI](#).
- [4] Vazouras, P., Karamanos, S. A., and Dakoulas, P. (2010), "Finite Element Analysis of Buried Steel Pipelines Under Strike-Slip Fault Displacements", *Soil Dynamics & Earthquake Engineering*, **30**(11) 1361-1376, [DOI](#).
- [5] Houliara, S. and Karamanos, S. A., "Buckling of Thin-Walled Long Steel Cylinders under Bending." (2011), *J. Pressure Vessel Technology*, ASME, **133**(1) Art. No. 011201, [[G. E. OttoWidera Literature Award](#) 2012, ASME, PVP Division], [DOI](#).
- [6] Vasilikis, D. and Karamanos, S. A. (2014), "Mechanics of Confined Thin-Walled Cylinders Subjected to External Pressure.", *Applied Mechanics Reviews*, ASME, *Invited paper*, **66** Art. No. 010801, [DOI](#).
- [7] Vazouras, P., Dakoulas, P., and Karamanos, S. A. (2015), "Pipe-Soil Interaction and Pipeline Performance Under Strike-Slip Fault Movements", *Soil Dynamics & Earthquake Engineering*, **72** 48-65, [DOI](#).
- [8] Chatzopoulou, G., Karamanos, S. A., and Varelis, G. E. (2016), "Finite Element Analysis of UOE Manufacturing Process and its Effect on Mechanical Behavior of Offshore Pipes", *Int J Solids and Structures*, **83** 13-27, [DOI](#).
- [9] Van Es, S. H. J., Gresnigt, A. M., Vasilikis, D., and Karamanos, S. A. (2016), "Ultimate Bending Capacity of Spiral-Welded Steel Tubes - Part I: Experiments", *Thin-Walled Structures*, **102** 286-304, [DOI](#).
- [10] Vasilikis, D., Karamanos, S. A., Van Es, S. H. J. and Gresnigt, A. M., (2016) "Ultimate Bending Capacity of Spiral-Welded Steel Tubes - Part II: Predictions", *Thin-Walled Structures*, **102** 305-319, [DOI](#).
- [11] Chatzopoulou, G., Karamanos, S. A., and Varelis, G. E. (2016), "Finite Element Analysis of Cyclically-Loaded Steel Pipes During Deep Water Reeling Installation", *Ocean Engineering*, **124** 113-124, [DOI](#).
- [12] Pournara, A. E., Karamanos, S. A., Mecozzi, E., Lucci, A. (2017), "Structural resistance of high-strength steel CHS members", *Journal of Constructional Steel Research*, **128** 152-165, [DOI](#).
- [13] Sarvanis, G. C., and Karamanos, S. A. (2017), "Analytical Model for the Strain Analysis of Continuous Buried Pipelines in Geohazard Areas.", *Engineering Structures*, **152** 57-69, [DOI](#).
- [14] Sarvanis, G. C., Karamanos, S. A., Vazouras, P., Mecozzi, E., Lucci, A., Dakoulas, P. (2018), "Permanent Earthquake-Induced Actions in Buried Pipelines: Numerical Modeling and Experimental Verification", *Earthquake Engineering & Structural Dynamics*, **47**(4) 966-987, [DOI](#).
- [15] Antoniou, K., Chatzopoulou, G., Karamanos, S. A., Tazedakis, A., Palagas, C., Dourdounis, E. (2019) "Numerical Simulation of JCO-E Pipe Manufacturing Process and its Effect on the External Pressure Capacity of the Pipe", *J. Offshore Mechanics & Arctic Engineering*, ASME, **141**(1), Art. No. 011704, [DOI](#).
- [16] Chatzopoulou, G., Sarvanis, G. C., Karamanos, S. A., Mecozzi, E., Hilgert, O. (2019), "The effect of spiral cold-bending manufacturing process on pipeline mechanical behavior", *Int J Solids and Structures*, **166** 167-182, [DOI](#).
- [17] Gelagoti, F., Kourkoulis, R., Georgiou, I., Karamanos, S. A. (2019), "Soil-Structure Interaction Effects in Offshore Wind Support Structures Under Seismic Loading", *J. Offshore Mechanics & Arctic Engineering*, ASME, **141**(6), Art. No. 061903, [DOI](#).
- [18] Chatziioannou, K., Karamanos, S. A., Huang, Y. (2019), "Ultra low-cycle fatigue performance of S420 and S700 steel welded tubular X-joints", *Int. J. Fatigue*, **129** 105221, [DOI](#).
- [19] Varelis, G. E., Papatheocharis, T., Karamanos, S. A., Perdikaris, P. C. (2020), "Structural behavior and design of high-strength steel welded tubular connections under extreme loading", *Marine Structures*, **71** 102701, [DOI](#).
- [20] Gavriilidis, I. and Karamanos, S. A. (2020), "Effect of manufacturing process on lined pipe bending response", *J. Offshore Mechanics & Arctic Engineering*, ASME, **142**(5) Art. No. 051801, [DOI](#).

## HONORS and AWARDS

|                    |  |
|--------------------|--|
| <b>1984</b>        | First (1st) in Nationwide General University Entrance Examinations, Civil Engineering, NTU Athens.   |
| <b>1989</b>        | First Honor Graduate (1st out of 350 students), Civil Engineering, NTU Athens.   |
| <b>1985 - 1989</b> | Fifteen (15) Awards and Merit-Based Scholarships from NTU Athens, National Scholarship Foundation of Greece and Technical Chamber of Greece for excellent academic performance.            |
| <b>1989 - 1993</b> | Full Academic Merit-Based Assistantship and two Merit-Based Departmental Fellowships for excellent academic performance, Dept. of Civil Engineering, The University of Texas, Austin, USA. |
| <b>2007</b>        | Sam Y. Zamrik Literature Award, American Society of Mechanical Engineering, Pressure Vessels and Piping Division for 2006 best paper in ASME Journal of Pressure Vessel Technology.        |
| <b>2012</b>        | G. E. Otto Widera Literature Award, American Society of Mechanical Engineering, Pressure Vessels and Piping Division for 2011 best paper in ASME Journal of Pressure Vessel Technology.    |
| <b>2020 - 2023</b> | Honorary Visiting Professorship, School of Engineering, The University of Edinburgh, Scotland, UK.   |

## INTERNATIONAL CONFERENCES (PARTIAL LIST)

### ASME International Conference on Ocean, Offshore and Arctic Engineering ([OMAE](#))

Regular attendance since 2005, *Member of Pipelines & Risers Symposium Committee*, ASME OMAE Division.

Most recent attendance: OMAE 2020, Fort Lauderdale, FL. Representative papers:

- Papatheocharis, T., Sarvanis, G. C., Perdikaris, P. C., Karamanos, S. A., "Fatigue of welded tubular X-joints in offshore wind platforms", 38th OMAE Conference, ASME, OMAE2019-95812, Glasgow, Scotland, UK, June, 2019
- Sarvanis, G. C., Karamanos, S. A., "Structural design of a floating offshore steel platform for wind/wave energy production", 39th OMAE Conference, ASME, OMAE2020-18371, Fort Lauderdale, FL, USA, June, 2020

**International Ocean and Polar Engineering Conference ([ISOPE](#))**. Most recent attendance: ISOPE 2016, Rhodos, Greece, Representative papers:

- Varelis, G. E., Papatheocharis, T., Karamanos, S. A., Perdikaris, P. C., "High-strength Steel Tubular Welded Joints under Extreme Loading Conditions", 26th ISOPE Conference, TPC-0788, Rhodos, Greece, June 2016
- Gresnigt, A. M., Van Es, S. H. J., Karamanos, S. A., Vasilikis, D., "Strain-based design rules for spiral-welded tubes using analytical modelling", 26th ISOPE Conference, TPC-1286, ISOPE, Rhodos, Greece, June 2016

**International Offshore Wind Technical Conference ([IOWTC 2019](#))**, Malta, November 2019. Presentations:

- Structural design of REFOS platform hull, IOWTC2019-7631
- Mechanical testing of REFOS platform welded joints, IOWTC2019-7632

**ASCE Pipelines Conference**. Member of Technical Committee on Seismic Design of Buried Pipelines.

Regular attendance since 2004, Most recent attendance: 2020, San Antonio, TX. Representative papers:

- Keil, B. D., Mielke, R. D., Gobler, F., Lucier, G., Sarvanis, G. C., Chatzopoulou, G., Fappas, D., Karamanos, S. A., "Newly Developed Seismic Resilient Steel Pipe Joint Safeguards Pipeline Structural Integrity during Severe Geohazard Events", ASCE Pipelines, 744041, San Antonio, TX, USA, August 2020
- Keil, B. D., Lucier, G., Karamanos, S. A., Mielke, R. D., Gobler, F., Fappas, D., Sarvanis, G. C., Chatzopoulou, G., Card, R. J., "Experimental Investigation of Steel Lap Welded Pipe Joint Performance Under Severe Axial Loading Conditions in Seismic or Geohazard Areas", ASCE Pipelines, 744005, San Antonio, TX, USA, August 2020

### ASME Pressure Vessels & Piping Conference ([PVP](#))

Regular attendance since 2005, Member of Seismic Engineering Technical Committee, ASME PVP Division.

Most recent attendance: PVP 2019, San Antonio, TX

Representative papers:

- Chatzopoulou, G., Karamanos, S. A., "Low-cycle fatigue of base-plate-to-shell connection in uplifting liquid storage tanks under seismic loading", PVP Conference, ASME, PVP2019-93419, San Antonio, Texas, USA, July 2019
- Chatziioannou, K., Huang Y., Karamanos S. A., "Simulation of piping ratcheting experiments using advanced plane-stress cyclic elasto-plasticity models", PVP Conference, ASME, PVP2019-93507, San Antonio, Texas, USA, July 2019

**Computational Methods in Structural Dynamics and Earthquake Engineering ([COMPDYN](#))**, ECCOMAS Conference,

Regular attendance since 2007, *Member of Scientific Committee*, Most recently: COMPDYN 2017, Rhodos, Greece.

Representative presentations:

- Numerical & experimental investigation of base plate integrity in unanchored liquid storage tanks, COMPDYN 2017
- Buried steel pipelines in seismic areas, COMPDYN 2017

## SUPERVISION OF GRADUATE & PHD STUDENTS, POSTDOCTORAL FELLOWS

|                       |   |
|-----------------------|---|
| <b>2003 - present</b> | Supervision of 9 PhD theses (7 completed); Co-supervision of 2 PhD theses (1 completed) [total: 11]<br><i>University of Thessaly, Dept. of Mechanical Engineering, Volos, Greece</i>        |
| <b>2000 - present</b> | Supervision of 39 Diploma Thesis Students (32 completed); 14 Graduate Diploma Thesis Students (13 completed), <i>University of Thessaly, Dept. of Mechanical Engineering, Volos, Greece</i> |
| <b>2013 - present</b> | Supervision of 3 Postdoctoral researchers<br><i>University of Thessaly, Dept. of Mechanical Engineering, Volos, Greece</i>  |
| <b>2017 - 2019</b>    | Supervision of 5 MS/BS thesis students<br><i>The University of Edinburgh, School of Engineering, Scotland, UK</i>   |
| <b>2016 - present</b> | Supervision of 2 PhD students; Co-supervision of 1 PhD students [total: 3]<br><i>The University of Edinburgh, School of Engineering, Scotland, UK</i>                                       |

## EDITOR, REVIEWING ACTIVITIES AND MEMBERSHIP

|                       |  |
|-----------------------|--|
| <b>2008 - 2015</b>    | Associate Editor, ASME Journal of Pressure Vessel Technology   |
| <b>2009 - present</b> | Associate Editor, ASCE Journal of Pipeline Systems, Engineering & Practice   |
| <b>2011 - 2013</b>    | Project Evaluator, RFCS program, European Commission, Brussels   |
| <b>2012 - present</b> | Member of Editorial Board, International Journal of Steel Structures   |
| <b>2019 - present</b> | Member of Editorial Board, Soil Dynamics and Earthquake Engineering  |
| <b>2011 - 2013</b>    | Chairman, Seismic Engineering Technical Committee, PVP Division, ASME  |
| <b>1990 - present</b> | Member, American Society of Civil Engineers (ASCE)   |
| <b>2004 - present</b> | Member, American Society of Mechanical Engineers (ASME)  |
| <b>1999 - present</b> | Reviewer in numerous international journals (partial list): Applied Ocean Research, ASCE Journal of Engineering Mechanics, ASCE Journal of Structural Engineering, ASCE Journal of Pipeline Systems Engineering and Practice, ASME Journal of Offshore Mechanics & Arctic Engineering, ASME Journal of Pressure Vessel Technology, Bulletin of Earthquake Engineering, Computer Methods in Applied Mechanics & Engineering, Computational Mechanics, Engineering Structures, Earthquake Engineering and Structural Dynamics, International Journal of Fatigue, International Journal of Nonlinear Mechanics, International Journal of Mechanical Sciences, International Journal of Pressure Vessels and Piping, International Journal of Solids and Structures, Journal of Constructional Steel Research, Journal of Pipeline Engineering, Journal of Strain Analysis, Marine Structures, Ocean Engineering, Thin-Walled Structures, Soil Dynamics and Earthquake Engineering |

## MEMBER OF DESIGN CODE AND MANUAL DRAFTING COMMITTEES

| Period                | Document  | Sponsor  |
|-----------------------|---|--|
| <b>2003 - present</b> | <i>Buckling of Shells, European Recommendations</i> . 5 <sup>th</sup> Edition, <a href="#">ECCS publication No. 125</a> , 2008; 6 <sup>th</sup> Edition in preparation.                 | European Convention for Construction Steelwork (ECCS)        |
| <b>2004 - 2009</b>    | <i>Buried Flexible Steel Pipe. Design and Structural Analysis</i> , ASCE Manual for Engineering Practice, <a href="#">MoP 119</a> , 2009.   | American Society of Civil Engineers (ASCE)                   |
| <b>2016 - present</b> | <i>Seismic Design of Buried Pipelines</i> , ASCE Manual for Engineering Practice (MoP), in preparation.   | American Society of Civil Engineers (ASCE)                   |
| <b>2015-present</b>   | <i>New Criteria for Seismic Design of Piping Systems</i> , <a href="#">MECOS</a> (Metallic Component Margins under High Seismic Loads), International Group of experts, in preparation. | Organization for Economic Cooperation and Development (OECD) |

## SYMPOSIUM AND WORKSHOP ORGANIZATION

|         |  |
|---------|--|
| 06.2014 | Symposium: “Geohazards and Pipelines; Safety of Buried Steel Pipelines under Ground-Induced Actions”, [principal organizer] sponsored by BIG & GIPIPE consortium, Delft, The Netherlands, June 23-24, 2014   |
| 04.2015 | Workshop: “Structural steel solutions in earthquake-prone areas; Design & Retrofitting” [principal organizer], organized by the University of Thessaly and Shelter S.A. in the course of RFCS STEEL-EARTH dissemination project, Volos, Greece, December 04, 2015. |
| 06.2019 | <a href="#">Workshop</a> : “Natural Hazards and Pipeline Infrastructure” [principal organizer with Costas Papazachos], organized in the ICONHIC 2019, Conference, Chania, Crete, Greece, June 24-26, 2019.   |

## RESEARCH PROJECTS

| Project Title   | Funding source                              | Period  | Role of the PI                     |
|---|---|---------|------------------------------------|
| Structural Integrity of Offshore Pipelines  | OTRC <sup>1</sup> , Texas, USA (NSF center) | 1988-92 | Researcher                         |
| Stability of Tubes Under External Pressure and Structural Loads   | OTRC, Texas, USA (NSF center)               | 1991-93 | Researcher                         |
| Fatigue Design for Circular and Rectangular Hollow Section Multi-planar Joints  | TU Delft Fellowship The Netherlands         | 1995-96 | Researcher                         |
| Development of Design Guidelines for the Seismic Design of Industrial Equipment   | EPPO <sup>2</sup> (ΟΑΣΠ) Athens, Greece     | 2001-03 | Principal Investigator (PI)        |
| FATHOMS: <a href="#">Fatigue behavior of high strength steels welded joints in offshore and marine systems</a>  | European Commission, RFCS <sup>3</sup>      | 2005-08 | Co-PI for UTH                      |
| OPUS: <a href="#">Optimising the seismic performance of steel and steel-concrete structures by standardising material quality control</a>   | European Commission, RFCS                   | 2007-10 | PI for UTH                         |
| PRECASTEEL: <a href="#">Prefabricated steel structures for low-rise buildings in seismic areas</a>  | European Commission, RFCS                   | 2007-10 | PI for UTH                         |
| STEELRETRO: <a href="#">Steel solutions for seismic retrofit and upgrade of existing constructions</a>  | European Commission, RFCS                   | 2007-10 | PI for UTH                         |
| HITUBES: <a href="#">Design and integrity assessment of high strength tubular structures for extreme loading conditions</a>   | European Commission, RFCS                   | 2008-11 | PI for UTH                         |
| ATTEL: <a href="#">Performance-based approaches for high strength tubular columns and connections under earthquake and fire loadings</a>  | European Commission, RFCS                   | 2008-11 | PI for UTH                         |
| INDUSE: <a href="#">Structural safety of industrial steel tanks, pressure vessels and piping systems under seismic loading</a> , <a href="http://www.mie.uth.gr/induse">www.mie.uth.gr/induse</a> | European Commission, RFCS                   | 2009-12 | Project coordinator and PI for UTH |
| Structural integrity of steel oil & gas pipelines with local wall distortions.  | Ministry of Education, Greece (HERAKLEITOS) | 2010-14 | Principal Investigator (PI)        |
| GIPIPE: <a href="#">Safety of buried steel pipelines under ground-induced deformations</a> , <a href="http://www.mie.uth.gr/gipipe">www.mie.uth.gr/gipipe</a>                                     | European Commission, RFCS                   | 2011-14 | Project coordinator and PI for UTH |
| COMBITUBE: <a href="#">Bending Resistance of Steel Tubes in CombiWalls</a>  | European Commission, RFCS                   | 2011-14 | PI for UTH                         |

<sup>1</sup>[OTRC](#): Offshore Technology Research Center, Texas, USA.

<sup>2</sup>Earthquake Planning and Protection Organization, Athens, Greece.

<sup>3</sup>[RFCS](#): Research Fund for Coal and Steel, European Commission, Brussels.

|  |  |         |                       |
|--|--|---------|-----------------------|
| ULCF: <a href="#">Ultra low cycle fatigue of steel under cyclic high-strain loading conditions</a>   | European Commission, RFCS                        | 2011-14 | PI for UTH            |
| RASOR: Risk Assessment for the Seismic Protection of Industrial Facilities   | GSRT <sup>4</sup> (ΓΓΕΤ) Athens, Greece (THALES) | 2012-15 | PI for UTH            |
| UPGRADE: Contemporary Evaluation Methodology of Seismic Vulnerability and Upgrade of Port Facilities   | GSRT (ΓΓΕΤ) Athens, Greece (THALES)              | 2012-15 | Co-PI for UTH         |
| MATCH: <a href="#">Material Choice for Seismic Resistant Structures</a>  | European Commission, RFCS                        | 2013-16 | PI for UTH            |
| SBD-SPIPE: <a href="#">Strain-based design of spiral-welded pipes for demanding pipeline applications</a>  | European Commission, RFCS                        | 2013-16 | PI for UTH            |
| INDUSE-2-SAFETY: <a href="#">Component fragility evaluation, seismic safety assessment and design of petrochemical plants under design-basis accident conditions</a>       | European Commission, RFCS                        | 2014-17 | PI for UTH            |
| JABACO: Development of Modular Steel Jacket for Offshore Windfarms, <a href="http://jabaco.uth.gr/">http://jabaco.uth.gr/</a>  | European Commission, RFCS                        | 2015-18 | PI for UTH            |
| REFOS: Life-Cycle Assessment of a Renewable Energy Multi-Purpose Floating Offshore System, <a href="https://refos3.wixsite.com/refos">https://refos3.wixsite.com/refos</a> | European Commission, RFCS                        | 2016-19 | PI for UTH            |
| FASTCOLD: Fatigue strength of COLD-formed structural steel details, <a href="https://fastcold-rfcs.com/">https://fastcold-rfcs.com/</a>                                    | European Commission, RFCS                        | 2017-20 | PI for UTH            |
| HSS-WIND: Application of high-strength steel in offshore wind energy tubular structures  | MSCA-IF, European Commission                     | 2018-20 | PI for U of Edinburgh |

## INDUSTRIAL PROJECTS(PRINCIPAL INVESTIGATOR)

| Project Title   | Sponsor   | Period  |
|---|---|---------|
| Water pipeline structural assessment in Rotterdam   | Waterbedrijf Europort NV, Rotterdam, The Netherlands        | 2002    |
| Assessment of tanks & vessels in Elefsina refinery, near Athens   | <a href="#">Hellenic Petroleum S.A.</a> , Athens, Greece    | 2006-09 |
| Seismic design and resilience of Willamette Water Supply System, Oregon   | <a href="#">HDR Inc.</a> , Portland, OR                     | 2015    |
| Seismic design of Trans Adriatic Pipeline (TAP)   | <a href="#">E.ON. Technologies GmbH</a> , Duisburg, Germany | 2014-15 |
| Structural strength and design of steel, composite and polyurethane panels  | <a href="#">Metalemporiki S.A.</a> , Larisa, Greece         | 2015-17 |
| Structural performance of buried steel water pipelines subjected to permanent ground deformation in Ptolemais Unit V 660 MW Power Plant             | <a href="#">C&amp;M Engineering S.A.</a> , Athens, Greece   | 2017-18 |
| Modelling of JCO-E pipe manufacturing procedure   | <a href="#">Corinth Pipeworks S.A.</a> , Thisvi, Greece     | 2018-20 |
| Seismic design and structural integrity of steel water pipelines  | <a href="#">Northwest Pipe Co.</a> , Vancouver, WA, USA     | 2018-20 |
| Structural assessment of two major steel water pipeline junctions at the TRWD KBR Bypass  | Northwest Pipe Co., Vancouver, WA, USA                      | 2019    |
| Structural Integrity of Buried Steel Water Pipes and Adjacent Concrete Wall Under Differential Settlement in Back River Waste Water Treatment Plant | Northwest Pipe Co., Vancouver, WA, USA                      | 2020    |

<sup>4</sup>General Secretariat for Research and Technology, Athens, Greece.