

BRIEF CURRICULUM VITAE

1 PERSONAL DATA	
Name	Spyridon (Spyros) A. Karamanos
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2 CURRENT POSITIONS	
2014 - present	Professor of Computational Structural Mechanics and Finite Elements Department of Mechanical Engineering, University of Thessaly, Volos, Greece
2023 - present	Vice-Rector of International Relations, Outreach and Lifelong Education University of Thessaly, Volos, Greece

3 PREVIOUS POSITIONS	
2016 - 2019	Professor and Chair of Structural Engineering [part-time appointment, in parallel with U Thessaly], School of Engineering, The University of Edinburgh, Scotland, UK
1999 - 2014	Lecturer, Assistant Professor and Associate Professor in Computational Structural Mechanics and Finite Elements Department of Mechanical Engineering, University of Thessaly, Volos, Greece
1996 - 1999	Structural Design Engineer Egnatia Odos S.A., Thessaloniki, Greece
1996 - 1996	Post-Doctoral Fellow Steel Structures Stevin Lab, Civil Engineering, TU Delft, The Netherlands
1994 - 1995	Military Service – Petty Officer Mandatory service (23 months), Hellenic Navy, Athens, Greece
1989 - 1993	Graduate Research and Teaching Assistant Department of Civil Engineering, The University of Texas at Austin, USA

4 EDUCATION	
1991 - 93	Ph.D. in Structural Mechanics, Department of Civil Engineering, The University of Texas at Austin, USA [PhD Thesis: <i>Stability of Tubes Under External Pressure and Structural Loads</i>]
1989 - 91	M.Sc. in Structural Engineering, Department of Civil Engineering, The University of Texas at Austin, USA [MSc Thesis: <i>Stability of Deep-Water Pipelines Under Combined Loading</i>]
1984 - 89	Diploma (5-year degree) in Civil Engineering, National Technical University of Athens, Greece (Highest Honors, 1st out of 350 students) [Diploma Thesis: <i>Geometrical Nonlinear and Elastic-Plastic Analysis of Three-dimensional Frames. Computational Solution Techniques</i>]

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

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

7 MEMBERSHIPS & REVIEWING ACTIVITIES	
2008 - 2015	Associate Editor, ASME Journal of Pressure Vessel Technology
2009 - 2021	Associate Editor, ASCE Journal of Pipeline Systems, Engineering & Practice
2011 - 2013	Project Evaluator, RFCS program, European Commission, Brussels
2012 - present	Member of Editorial Board, International Journal of Steel Structures
2019 - present	Member of Editorial Board, Soil Dynamics and Earthquake Engineering
2011 - 2013	Chairman, Seismic Engineering Technical Committee, PVP Division, ASME
1990 - present	Member, American Society of Civil Engineers (ASCE)
2004 - present	Member, American Society of Mechanical Engineers (ASME)
1999 - present	Reviewer in numerous international journals (partial list): Applied Ocean Research, ASCE Journal of Engineering Mechanics, ASCE Journal of Pipeline Systems Engineering and Practice, ASME Journal of Offshore Mechanics & Arctic Engineering, ASME Journal of Pressure Vessel Technology, Engineering Structures, Earthquake Engineering and Structural Dynamics, International Journal of Fatigue, 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

8 SUPERVISION OF UNDERGRADUATE & GRADUATE STUDENTS & POSTDOCTORAL FELLOWS	
2003 - present	Supervision of 10 PhD theses (8 completed); Co-supervision of 2 PhD theses [total: 12], <i>Univ. of Thessaly</i> , Dept. of Mechanical Engineering, Volos, Greece
2016 - present	Supervision of 2 PhD students (completed); Co-supervision of 1 PhD student (completed) [total: 3], <i>The Univ. of Edinburgh</i> , School of Engineering, Scotland, UK
2000 - present	Supervision of 39 Diploma theses (32 completed); 14 Graduate Diploma theses, (13 completed), <i>Univ. of Thessaly</i> , Dept. of Mechanical Engineering, Volos, Greece
2013 - present	Supervision of 4 Postdoc researchers, <i>Univ. of Thessaly</i> , Dept. of Mechanical Engineering, Volos, Greece
2017 - 2019	Supervision of 5 MS theses, <i>The U of Edinburgh</i> , School of Engineering, Scotland, UK

9 RESEARCH GRANTS [during the last decade]			
Project Title	Funding source	Period	Role of PI
Structural integrity of steel oil & gas pipelines with local wall distortions (HERAKLEITOS)	Ministry of Education, Greece	2010-14	PI
GIPIPE: Safety of buried steel pipelines under ground-induced deformations, www.mie.uth.gr/gipipe	European Commission, RFCS	2011-14	Coordinator & PI for UTH

COMBITUBE: Bending Resistance of Steel Tubes in CombiWalls	European Commission, RFCS	2011-14	PI for UTH
ULCF: Ultra-low cycle fatigue of steel under cyclic high-strain loading conditions	European Commission, RFCS	2011-14	PI for UTH
RASOR: Risk Assessment for the Seismic Protection of Industrial Facilities (THALES; PhD fellowship to PI's student)	GSRT ¹ (ΓΓΕΤ) Athens, Greece	2012-15	PI for UTH
MATCH: Material Choice for Seismic Resistant Structures	European Commission, RFCS	2013-16	PI for UTH
SBD-SPIPE: Strain-based design of spiral-welded pipes for demanding pipeline applications	European Commission, RFCS	2013-16	PI for UTH
INDUSE-2-SAFETY: Component fragility evaluation & seismic safety assessment of "special risk" petrochemical plants	European Commission, RFCS	2014-17	PI for UTH
JABACO: Development of Modular Steel Jacket for Offshore Windfarms, http://jabaco.uth.gr/	European Commission, RFCS	2015-18	PI for UTH
REFOS: Life-Cycle Assessment of a Renewable Energy Multi-Purpose Floating Offshore System, https://refos3.wixsite.com/refos	European Commission, RFCS	2016-19	PI for UTH
FASTCOLD: Fatigue strength of COLD-formed structural steel details, https://fastcold-rfcs.com/	European Commission, RFCS	2017-20	PI for UTH
SIRENES: Structural Integrity of Offshore Renewable Energy Platforms	H.F.R.I. ²	2022-25	PI
Structural Integrity of Offshore Steel Pipelines for Natural Gas/Hydrogen Transmission (PhD fellowship to PI's student)	H.F.R.I.	2023-26	PI

10 CONFERENCES/WORKSHOPS/etc

1. **ASME International Conference on Ocean, Offshore and Arctic Engineering (OMAE)**, Regular attendance since 2005, Member of Pipelines & Risers Symposium Committee, ASME OOA Division. Most recent attendance: OMAE 2022, Hamburg, Germany.
2. **International Ocean and Polar Engineering Conference (ISOPE)**. Most recent attendance: ISOPE 2016, Rhodos, Greece,
3. **International Offshore Wind Technical Conference (IOWTC)**. Most recent attendance 2019, Malta.
4. **ASCE Pipelines Conference**. Member of Technical Committee on Seismic Design of Buried Pipelines. Regular attendance since 2004. Most recent attendance: 2023, San Antonio, TX.
5. **ASME Pressure Vessels & Piping Conference (PVP)**, Regular attendance since 2005, Member: Seismic Engineering Technical Committee, ASME PVP Div. Most recent attendance: PVP 2021 (virtual).

11 INDUSTRIAL RESEARCH PROJECTS (PRINCIPAL INVESTIGATOR)

Project Title	Funding source	Period
Assessment of tanks & vessels in Elefsina refinery	Hellenic Petroleum S.A. , Athens, Greece	2006-09
Seismic design and resilience of Willamette Water Supply System, Oregon	HDR Inc. , Portland, OR, USA	2015
Seismic design of Trans Adriatic Pipeline (TAP)	E.ON. Technologies GmbH , Duisburg, Germany	2014-15
Structural performance of water pipelines under permanent ground deformation	C&M Engineering S.A. , Athens, Greece	2017-18

¹ General Secretariat for Research and Technology, Athens, Greece.

² [Hellenic Foundation for Research and Innovation \(ELIDEK\)](#), Ministry of Education, Athens, Greece.

Modelling of JCO-E pipe manufacturing procedure and collapse prediction of offshore pipes	Corinth Pipeworks S.A. , Thisvi, Greece	2018-23
Seismic design and structural integrity of steel water pipelines; InfraShield® joint for patent	Northwest Pipe Co. , Vancouver, WA, USA	2017-23
Residual strength of buckled steel tubes	BAM Infraconsult BV , Gouda, The Netherlands	2021
Expert Witness for Pipeline Structural Integrity	Energy Transfer , Dallas, Texas, USA	2021-23
Structural integrity of gas pipelines in geohazard areas	National Natural Gas System Operator S.A. , (DESFA) Athens, Greece	2023
Liner Wrinkling Acceptance Criterion	European Pipeline Research Group (EPRG), Duisburg, Germany	2023

12 REPRESENTATIVE PUBLICATIONS

J1. Karamanos, S.A., Romeijn, A., Wardenier, J. (2000), "Stress Concentrations in Tubular Gap K-joints: Mechanics & Fatigue Design", *Engineering Structures*, Vol. 22, No.1, pp. 4-14, [DOI](#).

J2. Karamanos, S.A. (2002), "Bending Instabilities of Elastic Tubes", *Int J Solids & Structures*, Vol. 39, No. 8, pp. 2059-2085, [DOI](#).

J3. 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, Vol. 128, No. 3, pp. 348-356 [**Sam Y. Zamrik Literature Award** 2006, ASME, PVP Division], [DOI](#).

J4. 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*, Vol. 30, No. 11, pp. 1361-1376, [DOI](#).

J5. Houliara, S. and Karamanos, S. A., "Buckling of Thin-Walled Long Steel Cylinders under Bending." (2011), *J. Pressure Vessel Technology*, ASME, Vol. 133, No.1, Article Number: 011201, [**G. E. Otto Widera Literature Award** 2012, ASME, PVP Division], [DOI](#).

J6. Vasilikis, D. and Karamanos, S.A. (2014), "On the Mechanics of Confined Steel Cylinders Under External Pressure.", *Applied Mechanics Reviews*, ASME, **Invited paper**, Vol. 66, Article Number: 010801, [DOI](#).

J7. Vazouras, P., Dakoulas, P., and Karamanos, S.A. (2015), "Pipe-Soil Interaction and Pipeline Performance Under Strike-Slip Fault Movements", *Soil Dynamics & Earthquake Engineering*, Vol. 72, pp. 48-65, [DOI](#).

J8. Chatzopoulou, G., Karamanos, S.A., 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*, Vol. 83, pp. 13-27, [DOI](#).

J9. 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*, Vol. 102, pp. 286-304, [DOI](#)

J10. 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*, Vol. 47, No. 4, pp. 966-987, [DOI](#)

J11. Chatzioannou, K., Karamanos, S.A., Huang, Y. (2019), "Ultra-low-cycle fatigue performance of S420 and S700 steel welded tubular X-joints", *International Journal of Fatigue*, Vol. 129, Article 105221, [DOI](#)

J12. 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 Struct.*, Vol. 71, Article 102701, [DOI](#)

J13. Papatheocharis, T., Sarvanis, G.C., Perdikaris, P.C., Karamanos, S.A., Zervaki, A.D. (2020), "Fatigue resistance of welded steel tubular X-joints", *Marine Structures*, Vol. 74, Article 102809, [DOI](#)

J14. Chatzopoulou, G. and Karamanos, S. A. (2021), "Numerical Implementation of Bounding-Surface Model for Simulating Cyclic Inelastic Response of Metal Piping Components", *Finite Elements in Analysis & Design*, Vol. 185, Article 103493, [DOI](#)

J15. Prosgolitis, C.G., Kermanidis, A.T., Kamoutsi, H., Haidemenopoulos, G.N., Karamanos, S.A. (2021), "Influence of plastic pre-straining on the fatigue crack propagation rate of S355MC and S460MC structural steels", *Fatigue & Fracture of Engineering Materials & Structures*, Vol. 44(5), 1391-1405, [DOI](#)

J16. Chatzioannou, K., Karamanos, S.A., Huang, Y. (2021), "Coupled Numerical Simulation of Low-Cycle Fatigue Damage in Metal Components", *Engineering Structures*, Vol. 229, Article 111536, [DOI](#)

J17. Chatzioannou, K., Karamanos, S.A., Huang, Y. (2021), "An Implicit Numerical Scheme for Cyclic Elastoplasticity and Ratcheting under Plane Stress Conditions", *Computers & Structures*, Vol. 249, Article 106509, [DOI](#)

J18. Gavriilidis, I. and Karamanos, S.A. (2021), "Liner wrinkling in offshore steel lined pipes during reeling installation", *Thin-Walled Structures*, Vol. 166, Article 108114, [DOI](#)

J19. Keil, B.D., Fappas, D., Gobler, F., Sarvanis, G.C., Chatzopoulou, G., Lucier, G., Mielke, R.D., Karamanos, S. A. (2022), "A New Concept for Improving the Structural Resilience of Lap-Welded Steel Pipeline Joints", *Thin-Walled Structures*, Vol. 171, Article 108676, [DOI](#).

J20. Nasikas, A., Karamanos, S.A., Papanicolopoulos, S.A. (2022), "A framework for formulating and implementing non-associative plasticity models for shell buckling computations", *International Journal of Solids and Structures*, Special Issue to honor Prof. Stelios Kyriakides, Vol. 257, Article 111508, [DOI](#)

13 MONOGRAPHS AND BOOKS

B1. 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, 208 pages, 2021, [book website](#) (ISBN: 978-3-030-49892-4)

B2. Karamanos, S. A., *Structural Mechanics and Design of Metal Pipes*, Elsevier, Amsterdam, Netherlands, 512 pages, 2023, [book website](#) (ISBN: 9780323886635)

14 PATENTS

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

15 RECENT INVITED PRESENTATIONS AND ADVANCED SCHOOLS

- Deepwater Mission to Venus; Technological Challenges for Deep Subsea Pipeline Construction. School of Civil Engineering, NTU Athens, Greece [invited lecture], Athens, December 2021.
- Technological challenges for constructing deep offshore pipelines, Institute of Steel Structures, École Polytechnique Fédérale de Lausanne (EPFL) [invited lecture], Lausanne, Switzerland, April 2023.
- Structural Mechanics of Hydrocarbon Steel Pipelines; Corinth Pipeworks, S.A. [invited short course], Thisvi, Greece, July 2023.

16 ORGANIZATION OF SYMPOSIA AND WORKSHOPS

06.2014	<u>Symposium</u> : "Geohazards and Pipelines; Safety of Buried Steel Pipelines under Ground-Induced Actions", [principal organizer] sponsored by BIG & the GIPIPE consortium, Delft, The Netherlands, June 23-24, 2014
04.2015	<u>Workshop</u> : "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	<u>Workshop</u> : "Natural Hazards and Pipeline Infrastructure" [principal organizer with Prof. C.B. Papazachos], organized in the ICONHIC 2019 Conf., Chania, Crete, Greece, June 24-26, 2019.
07.2022	<u>Workshop</u> : "Improving Resilience of Critical Energy Infrastructures" [principal organizer with C. Fuggini, G. Giunta], organized in ICONHIC 2022 Conf., Athens, Greece, July 05-07, 2022

17 MAJOR CONTRIBUTIONS TO THE EARLY CAREERS OF EXCELLENT RESEARCHERS

PI's students, because of their expertise in structural mechanics of infrastructure components and systems, are well-demanded by R&D departments in the industry. Most of them are currently employed in major positions in the energy industry sector (pipeline, pressure vessel & tank, fabrication, design & operation): TechnipFMC, Intecsea, Corinth Pipeworks, ABAX SA, DEYAMV, Technodyne International.