



## CURRICULUM VITAE

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<b>NAME:</b>	Torgeir Moan
<b>DATE OF BIRTH:</b>	1944-06-02, Malvik, Norway
<b>NATIONALITY:</b>	Norwegian
<b>LANGUAGES:</b>	Norwegian, English, German
<b>PROFESSION:</b>	Professor of Marine Structures, NTNU. Director, Centre for Ships and Ocean Structures.

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<b>EDUCATION:</b>	M.Sc., Civil Engineering The Norwegian Institute of Technology (NTH), 1968 PhD Civil Engineering, NTH, 1975 Thesis: Analysis of Spatial Finite Element Approximations
<b>FIELDS OF RESEARCH AND PROFESSION:</b>	Structural mechanics, finite element methods, stochastic dynamic analysis, risk/safety assessment – with applications in marine technology, civil engineering and mechanical engineering

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## EXPERIENCE (EMPLOYMENT):

### 1. Principal activities

From - to

1969 - 1970	Military service. 0.5 year military academy for non-commissioned officers, and 0.5 year service in Civil engineering Office, military region Northern Norway.
1970 - 1972	Research fellow, Division of Structural Mechanics, NTH; and stay at prof. Zienkiewicz' group in Swansea (prof. Zienkiewicz holds an Honorary dr.degree at NTNU)
1972 - 1976	Assistant prof., Division of Ship Structures, NTH (now NTNU)
1976 - 1977	Visiting prof., Dep. of Ocean Engineering, Massachusetts Institute of Technology
1977 - 1978	Assoc. Prof., Division of Ship Structures, NTH
1978 -	Prof., Div. of Marine Structures (formerly: Ship Structures) NTH
1980 - 1981	Commissioner, the Royal Inquiry Commission of the Alexander L. Kielland Accident. (On leave of absence from NTH).
1982 - 1984	Deputy Head, Department of Marine Technology, NTH
1984 - 1986	Head of Department of Marine Technology, NTH
1986 - 1987 and	Visiting Prof., Department of Naval Architecture and Ocean Engng. Univ. of California, Berkeley.
1993 - 1994	
2002 - 2012	Director, the Norwegian Centre of Excellence: Centre for Ships and Ocean Structures (activities continued ad-hoc since 2012)
2002 - 2007	Keppel Professor, the National University of Singapore (adjunct professorship)

### 2. Other professional activities

1974 -	Scientific Advisor to SINTEF (a research organization with approx. 2300 employees)
1975 - 1983	Member of Det norske Veritas' Advisory Committee on Offshore Technology, for Offshore Code Development



1980 - 1983	Member of the Board of the "Safety Offshore Research Program" (member of the Council 1978-80). Total budget: USD 20 mill.(in terms of 1980 money value) – at the time said to be the largest program sponsored by the Research Council of Norway until then)
1982 -	Member of the Norwegian Petroleum Directorate's Committee on "Regulations for Local-carrying Structures for Offshore Exploitation of Oil and Gas".
1983 - 1986	Member of ASCE's Committee on the Reliability of Offshore Structures.
1984 - 1989	Member of the Joint Research Committee of NTH (now: NTNU) and SINTEF
1984 - 1989	Member of the NTN Marine Technology Committee
1984 - 1986 and 1990 - 1995	Member of the Board of Directors, NTH
1984 - 1989	Chairman, Committee for Doctoral Studies, NTH (Member since 1981).
1985 - 1991	Member, SINTEF's Council
1985 -	Member, Int. Assoc. of Structural Safety and Reliability
1994 -	Member of Standing Committee of Int. Ship Structures Congress. (Previously member/chairman of Committee II.1 1973-82 and the Design Philosophy Committee 1982-91, Chairman Committee on Applied Design.).
1985 - 1989	Chairman, the Norwegian Council of Scientific Research's fellowship Committee. (Member since 1984).
1986 - 1988	Member of ECOR Committee on Reliability of Offshore Structures
1989 - 1997	Member of the Board, Norwegian Academy of Technical Sciences (Vice-president 1994-1997)
1989 - 1997	Chairman, Nordic Committee for Industrial Research with secretariate at ATV, Lyngby (Member since 1985 -)
1990 - 1999	Member of the Norwegian Building Standards Assoc. Committees on - Reliability of Structures - Load Requirements
1990 - 1993	Member of the Central Planning Committee, NTH (now: NTNU)
1990 -	Member of ISO Working Group for "Reliability of Structures" (ISO 2394) and task group on "Combination of Actions".
1990 -	Member of Joint Industry Group for developing an International code for design of Floating Offshore Structures.
1992 -	Member of ISO Working Group for developing a design code for offshore structures.
1993 -	Member of the Advisory Research Council for MARINTEK
1994 - 1996	Member of the Strategy Committee for Marine Technology, the Norwegian Council for Research
1994 - 1997	Chairman of the Standing Committee of the Int. Ship and Offshore Structures Congress
1993 - 1997	Vice president, Norwegian Academy of Technical Sciences
1996 - 1999	Member of Board of Directors, Norwegian University of Science and Technology (NTNU)
1999 - 2004	Member of Norwegian University Council Committee - Evaluation of Study Program at Stavanger College - "Immaterialrett"
2000 - 2003	Member, SINTEF's Council
2000 -	Chairman, Norwegian Building Standards Assoc. Comm. on Reliability of Structures
2002 -	Member, Council of Representatives from Parliament and Science
2002 -	Director, Centre for Ships and Ocean Structures - A Centre of Excellence established by the Norwegian Research Council
2008 -	European Research Council, Expert Evaluator, Advanced Grants
2010	Member, IEC committee for offshore wind turbines
2012-2015	Member of the board, of the Research Institute MARINTEK
2012	Member of the Board, & Sci. Committee, European Wind Energy Master program
2012-2014	Chairman, Advisory Committee, School of Engineering and Technology, Aalto University
2013-2015	Member of the Board, Research Institute MARINTEK
2013 -	Senior Scientific Advisor to the Norwegian Centre of Excellence: Autonomous Marine Operations and Systems (AMOS)
2015 -	Member, Cranfield (University) Energy Strategic Advisory Board



2016- Member, Advisory Committee, CISSE, Shanghai JiaoTong University

*In addition, I have participated in several ad-hoc committees, e.g. UNESCO Comm. For curricula in ocean engineering, and NATO Comm. for evaluating research proposals.*

#### Abbreviations:

- NTNF - The (former) Norwegian Council for Scientific and Technological Research in Norway  
 NTH - the Norwegian Institute of Technology (member of the Leuven club of universities)

### 3. Other Commitments

#### **Member of organizing committees for the following international conferences:**

- *Behaviour of Offshore Structures (BOSS) Trondheim, 1976; London, 1979; MIT, 1982; Delft, 1985; Trondheim, 1988; London, 1992; MIT, 1994; Delft, 1997; Chairman of the 1988 conference.*
- *Int. Conf. on Structural Safety and Reliability (ICOSSAR) Trondheim, 1981; Kobe, 1985; Innsbruck, 1993; Kyoto, 1997; Newport Beach (LA), 2001; Rome, 2005; Osaka, 2009, New York, 2013; Vienna, 2017; Chairman of the 1981 conference.*
- *Int. Conf. on Practical Design of Ships and Mobile Structures (PRADS) Trondheim, 1987; Varna, 1989; Newcastle, 1992; Seoul, 1995; Houston, 2007; Rio, 2011; Changwon City (Korea), 2013; Copenhagen, 2016..*
- *WEGEMT School on Advanced Aspects of Offshore Engineering Trondheim/Aachen /Wageningen, 1979.*
- *Int. Conf. on Ships and Offshore Structures, Trondheim, 1997; Nagasaki, 2000; San Diego, 2003.*
- *Int. FAST Conf., Trondheim, 1991; Seattle, 1999; Southampton, 2001; Ischia, 2003, St. Petersburg, 2005; Shanghai, 2007; Athens, 2009; Honolulu, 2011.*
- *Third Int. Forum on Aluminium Ships, Haugesund, 1998*
- *Chairman EURODYN '93 Conf., Trondheim, 1993, member EURODYN; Florence, 1996; Prague, 1999; Munich, 2002; Paris, 2005; Southampton, 2008; Leuven, 2011; Porto 2014*
- *Int. Conf. on Hydroelasticity, Trondheim, 1994*
- *Int. Conf. on Prob. Mechanics, Second Conf. Athens, 1994; Third Conf. 1998*
- *Offshore Brazil, Rio de Janeiro, 1995, 1997*
- *European Conf. on Steel Structures, First Conf. in Athens, 1995; Second Conf. in Prague 1999;*
- *Third Conf. in 2002, Coimbra, Portugal; Fifth Conf. Graz, Austria 2008.*
- *Chairman, ISSC '97 Conf., Trondheim, 1997*
- *ICASP8, Sydney, 1999; ICASP9, San Francisco, 2003; Tokyo, 2007; ICASP Vancouver, 2015.*
- *Civil and Environmental Engineering Conf., Bangkok, 1999*
- *ASCE Prob. Mechanics Conf., 2000*
- *Int. Maritime Assoc. of the Mediterranean Congress, Crete, 2002*
- *Fifth World Congress on Computational Mechanics, Vienna, 2002.*
- *OMAE Congress, Oslo, 2002; OMAE Congress, Mexico, 2003; OMAE Congress Vancouver, 2004; Haldikiki, Greece, 2005; Hamburg, 2006; San Diego, 2007; Lisbon, 2008; Honolulu, 2009; Shanghai, 2010; Rotterdam, 2011; Rio, 2012; Nantes 2013; San Francisco, 2014*
- *NAV 2003, Palermo; NAV 2006, Genova.*
- *ASRANet Glasgow, 2001; Barcelona, 2004; Glasgow, 2006; Athens, 2008; Edinburgh, 2010; London, 2012, Glasgow, 2014.*
- *International Conference On Marine Research and Transportation (ICMRT'05)*
- *ECCOMAS Thematic Conference: Marine: Oslo, 2005; Barcelona, 2007; Trondheim, 2009.*
- *HSMV 2008, Naples.*
- *IALCCE 2008, Varenna; Taipei, Taiwan, 2010 ; Vienna, 2012; Delft 2016; Leuven, 2018*
- *DTec Conference, Shanghai, 2008.*
- *DOSS-2009, Harbin, 2009.*
- *Offshore Structures Reliability Conference, Houston, 2014; Chairman, Stavanger 2016*
- *RENEW Conference, Lisbon, 2014; 2016*
- *SRES conference, Hangzhou, 2015 International Offshore Wind Technical Conference (IOWTC) , San Francisco, 2018.*
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**Member of the editorial board of the following international journals.**

- *Marine Structures*, Elsevier (2001 - ), **Editor** ( Member of the Board since 1988
- *Civil and Structural Engineering* (2007- )
- *Computers and Structures*, Pergamon Press (1978-1991)
- *Constructional Steel Research*, Elsevier (1990 - 2001)
- *Engineering Structures*, (1978-1998)
- *Marine Science and Technology*, SNAJ and Springer Verlag, Tokyo (1995 - )
- *Marine systems and ocean technology*, SOBENA, Rio de Janeiro (2004- )
- *Prob. Engng. Mechanics*, Butterworth (1994 – 99)
- *Ships and offshore structures*, Woodhead Publ. Ltd, Cambridge (2006 - 2008)
- *Ship Technology Research* (1999 - )
- *Structural Safety*, Elsevier (1982 - 2008)
- *Structure and Infrastructure Engineering*, Taylor & Francis (2004- )
- *Uncertainties in Engineering Mechanics* (2000 - )
- *International Journal of Engineering under uncertainty: Hazards, Assessment and Mitigation*, Serials Publications (2008 - )
- *Journal of Renewable Energy* (2014-)
- *Journal of Engineering*, Chinese Academy of Engineering (2015-)
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**Evaluation of university and extensive research applications programs**

- Naval Arch. and Ocean Engng., Federal University of Rio de Janeiro, 1995
- Naval Arch. and Ocean Engng., University of Sao Paulo, 1998
- Instituto Superior Technico, Marine Technology Unit, Lisbon, 1999
- Engineering School, University College, Stavanger, 1999
- Faculty of Mechanical Engng., Technical University Delft, Eindhoven University of Technology, University of Twente, 2008
- EU Advanced Grants, 2008-
- Aalto University, Helsinki, 2009
- Mechanical Engng., Swedish universities, 2013
- School of Marine Science and Technology, University of Newcastle, 2013
- 3M Faculty, Technical University of Delft, 2014
- SINTEF Fishery and Aquaculture, Trondheim, 2015.

In addition, I have evaluated research project and (some) program applications in Canada, China, Denmark, Netherlands, Portugal, Singapore, Spain, UK, USA.

**4. Main Projects****Clients****Projects**

Aker Group	Main responsible for design
Aker Engineering	Joints in semi-submersibles and transition pieces between column and deck in Condeep Gravity Platforms, 1974-75.
Aker Engineering	Structural Assessment of the Transport mode of Condeep Platform Decks, 1975
North Sea Operators and NTNF	Risk Assessment of the Continental Shelf Activities, particularly of Mobile Rig Operations.
Norwegian Government	Main responsible in the Inquiry Commission for the technical investigations of the Alexander L. Kielland accident.
CONOCO	Main responsible for project on probability-based fatigue Design Code of Offshore Platforms.
Kværner – Moss	Comparative Safety Assessment of Low Temp. Tank
Rosenberg, F. Selmer	Concepts, Kårstø LNG Terminal Facility, 1982.



The Norwegian Petroleum Directorate	Development of codes of Load-carrying structures
NTNF and offshore industry	Stability criteria of Mobile Units
Stavanger Police	Assessment of the Abnormal Heeling of Henrik Ibsen
Phillips Petroleum Co.	Member of Editorial Committee and Contributor to Fatigue Design Handbook
Exxon, Norsk Hydro Shell and Statoil	Reviewer/advisor to Handbook for Accidental Load
NTNF, Kværner, Kongsberg UF	Feasibility Study of Floating Production Platforms
Stena Shipowners	Fatigue Design Review of a Semi-submersible platform
Statoil	Development of TLP Design criteria, 1984.
Norsk Hydro, Statoil and others	Marine Structures Research Program 1983 - 89
Conoco, Norsk Hydro, Saga, Statoil, SikteC	Structural risk analyses of platform concepts
UK Dep. of Energy; Norw. Maritime dir., Esso Norway, Saga, Shell, Norsk Hydro, Statoil	Risk Assessment of Buoyancy Loss in Mobile Units, 1985.
Norwegian Petroleum Directorate	Review of Risk Assessment of Platform 34/10
Golar Nor, Norsk Hydro	Structural Evaluation of Petrojarl I, 1985-86.
Saga Petroleum	Conceptual Safety Evaluation of TLP platforms for the Snorre field, 1986.
Saga Petroleum	Review of the Design Basis for the Snorre TLP, 1987
Aker Engineering	Conceptual Study of Production Ships
Norwegian Road Administration	Calibration of Codes for Submerged, Buoyant Bridges., 1988
The Norwegian Ship- owners Assoc. and Petroleum Directorate	Safety Regulations for Production Ships, 1986-87
Joint Industry Project NTNF/Industry	Handbook of Accidental Loads, 1987-88. Structural Analysis and Design of High Speed Vehicles, 1988 -
Conoco and others	Model Code for Floating Offshore Platforms, 1990 - 1992



Conoco, Statoil and others	Damage - Tolerance criteria for TLP concrete Hulls, 1990-1992
Norwegian Road Administration	Safety Evaluation of Submerged, Buoyant Bridge Concept, 1990.
Joint Industry Project	Reassessment of Offshore Structures, 1991 -
Statoil	Sleipner Accident Investigation, 1991
Joint Industry Project	Probabilistic code for pipelines, MASPUS/SUPERB, 1992 -
Italian Consort.	Design Criteria for submerged Tunnel Bridges across the Messina Strait, 1992 -
SINTEF, NTNU	Hydroelasticity – strategic research project program, 1992-2002
Phillips Petr. Co.	Reassessment of existing jacket structures, 1994-
Kværner	Assessment of Troll Olje Platform
Int. Standards Org. Statoil/BP	Reliability Levels of Offshore Structures – across different Structural Forms and Materials, 1994-95.
Amoco, Elf, Phillips Petr., HSE and Aker Offshore Partner	Probabilistic Inspection Planning - Correlation with Inspection Observations, 1995 -
Joint Oil Company	Design Guidelines for Ringing, 1993 – 1994
Norwegian and US Navy, Ulstein, Kværner, et al.	Dynamic Analysis Support System (Load and Procedures for High Speed Vessels), 1994 -
Statoil	Probabilistic inspection planning for Heidrun Tethers, 1995
Norwegian Road Administration	Review of Design Basis of Submerged, Buoyant Bridge Across Hogsfjord, 1996-98
Hydro Al., Kværner, and Det Norske Veritas	Aluminium in Ships, 1996 -2001
Joint Industry Project, Norwegian Stand. Organization (NTS)	NORSOK Standards for Actions & Actions Effects, Steel Structures, 1997 -
Esso, Statoil, HSE	Operational Safety of FPSO, 1997
HSE	Target levels for Reliability-based Assessment of Offshore Structures during Design and Operation, 1998
Statoil	Regulification of Veslefrikk B hull structure and mooring system, 1998 – 1999
Norwegian Petr. Dir	Review of the Technical Regulations of NPD, 1998 -
DNV	Safety of Sea Committee 1999 -
Norsk Hydro	Ormen Lange pipeline, 1999



Inquiry Comm. After the Grounding of M/S Sleipner	Structural Assessment of M/S Sleipner, 2000
Statoil/Moss Maritime	Assessment of ageing mobile platforms, 2001 Risk Analysis of FPSOs, 2000 – 2001
American Bureau of Shipping	Risk Analysis of FPSOs, 2000 - 2001
American Bureau of Shipping	Reliability-based inspection of FPSOs, 2002 - 2003
NPD	Assessment of ageing-induced risk of total loss of semi-submersibles, 2002 -
NFR, industry consortia	Centre of Excellence in Ships and Ocean structures, 2002 -
EU	MARSTRUCT- network of excellence, 2002 –
NFR	Extreme Wave Load Effects, Strategic Univ. Programme, 2003 – 2008
NFR	Intelligent structures in fisheries and aquaculture, Strategic Institute Programme, 2004 – 2008
American Bureau of Shipping	Calibration of FPSO Codes, 2003-2004
Norsk Hydro, Ship-owners Association of Norway, Statoil	Safety of DP operations of Drilling Vessels, 2003 - 2005
NFR	Scenario-based risk assessment of collisions and grounding, Strategic Univ. Programme, 2005 –
EU, Fred Olsen, ABB	SEEWEC (Wave Energy Conversion) 2005 – 2009
EU	Marie Curie network, Wavetram 2, 2008 –
NFR (competence development with user support)	Safe Operations of Subsea Systems (SOSS), CeSOS is a partner with SFH, 2008 –
NFR, industry	Centre for Research Based Innovation in Aquaculture Technology CREATE, 2007- 2015
NFR	Offshore Wind Energy in Norway: Setting the Basis, Strategic University Program, 2008 - 2012
NFR, industry (Research centre for environmentally friendly energy)	Nowitech – Norwegian Wind Technology Centre, (CeSOS is a partner), 2009 – 2017
EU	Marina Platform – for offshore wind and wave energy production, 2009- 2014
Joint Industry Project	Risk based inspection planning of marine structures 2010-2013
EU	MARE-WINT – Materials and Reliability of Wind Turbines 2012-2016
Norwegian Public	E-39 Floating bridge project (2014- ):Development of methodology for



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dynamic response analysis of long bridges subjected to wind and sea loads; and safety assessment

## 5. Publications

### 5.1 Research and Development Papers

#### Books

1. Moan, T. and Shinozuka, M. (eds.): "Proc. Third Int. Conf. on Structural Safety and Reliability", Elsevier Publishing Co., Amsterdam, 1981.
2. Moan, T. et al.: "The Alexander L. Kielland Accident" (in Norwegian, English translation available), NOU 11: 1981, Universitetsforlaget, Oslo, March 1981.
3. Næss, A. and Moan, T. "Stochastic Dynamics of Marine Structures" Cambridge University Press, September 2012.

#### Book Chapters

1. Holand, I. and Moan, T.: "The Finite Element Method in Plate Buckling", Chapter 16 in Finite Element Methods in Stress Analysis, Holand, I. and Bell, K. (eds.), Tapir, Trondheim, 1969.
2. Moan, T.: "Overview of Offshore Structures", Chapter 1 in "Fatigue Handbook", A. Almar-Næss (ed.), Tapir, Trondheim, 1985.
3. Moan, T. et al.: "Report of Committee on Design Philosophy", ISSC, Genova, Italy, September 1985.
4. Moan, T. et al.: "Report of Committee IV.1. Design Philosophy", Proc. ISSC Conf., Copenhagen, August 15.-19., 1988.
5. Moan, T. et al.: "Report of Committee IV.1 Design Philosophy", Proc. ISSC, Wuxi, China, Sept. 1991.
6. Moan, T. et al.: "Report of ISSC Committee V.1 Applied Design - Strength Limit States Formulations", Proc. 12<sup>th</sup> ISSC Congress, St. John's New Foundland, Sept. 1994.
7. Moan, T. et al "General principles on reliability for structures". IS 2394. International Organization for Standardization, 1998.
8. Moan, T., "Wave Loading" in Dynamic Load and Design of Structures". Chapter 5. pp. 176-230. Spon Press, London, 2001.
9. Næss, A. and Moan, T. "Probabilistic design of offshore structures", Chapter 5 in *Handbook of Offshore Engineering*, Elsevier, S.K. Chakrabarti (ed.), 2005, pp. 197-278.
10. Moan, T. Offshore Structures, Chapter 7. In *Complex Structures*, R. E. Melchers (ed.), ASCE, 2006.
11. Moan, T., Das, P., Friis- Hansen, P., Gu, X., Hovem, L., Parmentier, G., Shigemi, T. and Spencer, J. "Reliability based structural design and code development", 16<sup>th</sup> Int. Ship and Offshore Structures Congress, Southampton University Press, 2006, 58 pp.
12. Moan, T. Reliability of aged offshore structures Chapter 11, In Paik, J.K. & Melchers, R.E. Condition Assessment of Aged Structures, CRC Press, Boca Raton, 2008.
13. Choo, S.R, Moan, T., et al ISSC Committee V.7. Report 2009.
14. Moan, T., Shu, Z. and Jia, H. Reliability of Intact and Damaged Ships in the Ultimate Limit State: A Review. In: Centre for Marine Technology and Engineering (CENTEC) Anniversary Book. CRC Press, Lisbon, Portugal, 2012. ISBN 978-0-415-69808-5.
15. Moan, Torgeir; Bugalski, Thomas. An Overview of Analysis and Design of Offshore Wind Turbines. I: MARE-WINT. Springer Publishing Company 2016 ISBN 978-3-319-39094-9. pp. 169-171.
16. Cheng, Zhengshun; Moan, Torgeir; Gao, Zhen. Dynamic response analysis of floating wind turbines with emphasis on vertical axis rotors. I: MARE-WINT. Springer Publishing Company 2016 ISBN 978-3-319-39094-9. pp. 173-192
- 17.

#### PhD thesis

1. Moan, T.: "Analysis of Spatial Finite Element Approximations in Structural Mechanics", Doctoral Thesis, Report no. 76-3, Division of Structural Mechanics, NTH, 1976.

#### Journal papers





1. Moan, T.: "A Finite Element Stress Field Solution of the Problem of St. Venant Torsion", Int. J. Num. Methods. in Engng., Vol. 5, 1973, pp. 455-458.
2. Moan, T.: "On Shell effects in Ferro-Cement Vessels", Norwegian Maritime Research, Vol. 1, No. 4, 1973, pp. 1-6.
3. Moan, T.: "A Note on the Convergence of Finite Element Approximations for Problems Formulated in Curvilinear Co-ordinate Systems", Computer Methods in Applied Mechanics and Engineering, Vol. 3, 1974, pp. 209-235.
4. Moan, T.: "Experiences with orthogonal Polynomials and "Best" Numerical Integration Formulas on a triangle; with particular reference to Finite Element Approximations", Zeitschrift für Angewandte Math. und Mechanik, Vol. 54, 1974, pp. 501-508.
5. Moan, T.: "Discussion of the paper: "Toward a Unified Approach to Ship Structural Safety", Paper no. 3, Spring Meeting, Royal Institute of Naval Architects, London, 1978 by D. Faulkner and J. A. Sadden.
6. Søreide, T.H., Moan, T. and Nordsve, N.T.: "On the Behaviour and Design of Stiffened Plates in Ultimate Limit State", J. Ship Research, Vol. 22, No. 4, December 1978.
7. Taby, J., Moan, T. and Rashed, S.: "Theoretical and Experimental Study of the Behaviour of Damaged Tubular Members in Offshore Structures", Norwegian Maritime Research, Vol. 9, No. 2, 1981. (Also first Indian Conf. in Ocean Engng., Madras, Febr. 18.-20. 1981).
8. Guedes Soares, C. and Moan, T.: "Statistical Analysis of Still Water Bending Moments and Shear Forces in Tankers, Ore and Bulk Carriers", Norwegian Maritime Research, No. 3, 1982.
9. Engesvik, K. and Moan, T.: "Probabilistic Fracture Mechanics Analysis of Fatigue Strength of Welded Structures", J. Engng. Fracture Mechanics, Vol. 18, No. 4, 1983.
10. Haver, S. and Moan, T.: "On Some Uncertainties related to the Short term Stochastic Modelling of Ocean waves", J. Applied Ocean Research, No. 2, Vol. 5, 1983.
11. Fylling, I.J. and Moan, T.: "Extreme Values of Non-linear Motion and Loads in Ocean towing and Mooring Systems", Norwegian Maritime Research, Vol. 12, No. 4, 1984.
12. Moan, T.: "Summary of ISSC Report of Committee IV.I Design Philosophy", J. Marine Structures, Vol. 2, 1989, pp. 45-49.
13. Jiao, G. and Moan, T.: "Probabilistic Analysis of Fatigue due to Gaussian Load Processes", J. Prob. Engng. Mechanics, Vol. 5, No. 2, 1990.
14. Jiao, G. and Moan, T.: "Methods of Reliability Model Updating through Additional Events", J. Structural Safety, Vol. 9, No. 2, 1990.
15. Fujikubo, M., Berge, S. and Moan, T.: "CTOD Estimates of Surface Cracked Wide Plates in Bending - I. Finite Element Analysis", Engineering Fract. Mechanics, Vol. 40, 1991, No. 3, pp. 627-639.
16. Fujikubo, M., Berge, S. and Moan, T.: "CTOD Estimates of Surface Cracked Wide Plates in Bending - II. Level 3 CTOD Method", Engineering Fracture Mechanics, Vol. 40, 1991, No. 3, pp. 641-651.
17. Fujikubo, M., Berge, S. and Moan, T.: "CTOD Estimates of Surface Cracked Wide Plates in Bending - III. Wide Plate with Overmatched Welded Joint", Engineering Fracture Mechanics, Vol. 40, 1991, No. 3, pp. 653-665.
18. Guedes Soares, C. and Moan, T.: "Model Uncertainty in the Long-term Distribution of Wave-induced bending Moments for Fatigue Design of Ship Structures", J. Marine Structures, Vol. 4, No. 4, 1991.
19. Wu, Yu-lin and Moan, T.: "An Incremental Load Formulation for Limit State in the Reliability Analysis of Nonlinear Systems", J. Structural Safety, Vol. 10, 1991, pp. 307-325.
20. Jiao, G. and Moan, T.: "Reliability-based Fatigue and Fracture Design Criteria for Welded Offshore Structures", J. Engineering. Fracture Mechanics, Vol. 41, 1992, No. 2, pp. 271-282.
21. Olufsen, A., Leira, B.J. and Moan, T.: "Uncertainty and Reliability Analysis of Jacket Platform", J. ASCE, St. Engng. Div., Vol. 118, No. 10, Oct. 1992, pp. 2699-2716.
22. Bai, Y., Igland, R. and Moan, T.: "Tube Collapse Under Combined Pressure, Tension and Bending Load", J. Offshore and Polar Engng., Vol. 3, No. 3, June 1993.
23. Farnes, K.-A. and Moan, T.: "Extreme dynamic, non-linear response of fixed platforms using a complete long-term approach", Applied Ocean Research, Vol. 15, No. 6, pp 317-326, 1994.
24. Hovde, G.O. and Moan, T.: "Fatigue Reliability of TLP Tether Systems", Proc. 13<sup>th</sup> OMAE Conf., Houston, ASME, New York, 1994, Vol. 2, pp. 141-150.
25. Moan, T. et al.: "Limit States for the Ultimate Strength of Tubulars Subjected to Pressure, Bending and Tension Loads", J. Marine Structures, Vol. 7, 1994, pp. 323-344.
26. Moan, T.: "Book Review. A Course in Ocean Engineering", J. Structural Safety, Elsevier, Vol. 13, 1994, pp 285-286.
27. Wang, X., Jiao, G. and Moan, T.: "Reliability Analysis of Offshore Production Ships", J. ISOPE, Vol. 4, No. 4, Dec. 1994, pp 302-311.



28. Bai, Y., Igland, R. and Moan, T.: "Collapse of Thick Tubes under Combined Tension and Bending", J. Construct. Steel Research", Vol. 32, 1995, pp 233-257.
29. Estefen, S.F., Moan, T., Sævik, S. and R.A. Zimmer: "Limit State Formulations for TLP Tendon and Steel Riser Bodies", J. Construct. Steel Research, Vol. 32, 1995, pp 107-121.
30. Theotokoglou, E. and Moan, T.: "Experimental and Numerical Study of Composite T-joints". J. Composite Materials, Vol. 30, No. 2, 1996, pp.190-209.
31. Wang, X. and Moan, T.: "Stochastic and Deterministic Combinations of Still Water and Wave Bending Moments in Ships", J. Marine Structures, Vol. 9, 1996, pp. 787 – 810.
32. Wang, X., Jiao, G. and Moan, T., "Analysis of Production Ships Considering Load Combinations, Ultimate Strength and Structural Reliability", SNAME Annual Meeting, New York, Oct. 2 -5, 1996. Also: SNAME Trans. Vol. 104, 1996, pp. 3-30.
33. Wu, M.K. and Moan, T.: "Linear and Nonlinear Hydroelastic Analysis of High-Speed Vessels", J. Ship Research, Vol. 40, 1996, No. 2.
34. Hovde, G. and Moan, T., "Fatigue Reliability of TLP Tether Systems", J. OMAE, 1997, Vol. 119, No.1, pp.53-60.
35. Bai, Y., Igland, R. and Moan, T., "Tube Collapse under Combined External Pressure Tension and Bending loads, J. Marine Structures, 1997, Vol. 10, No. 5, pp. 389-410.
36. Wang, X. and Moan, T., "Ultimate Strength Analysis of Stiffened Panels in Ships Subjected to Biaxial and Lateral Loading", J. ISOPE, Vol. 7, No.1, pp. 22-29.
37. Hermundstad, O.A., Aarsnes, J.V. and Moan, T. "Linear Hydroelastic Analysis of High-Speed Catamarans and Monohulls", J. Ship Research, Vol. 43, No. 1, March 1999, pp. 48-63.
38. Baarholm, G. S. and Moan, T., "Estimation of nonlinear long-term extremes of hull girder loads in ships", J. Marine Structures 13, May-June 2000, pp. 495-516.
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2. “The Alexander L. Kielland Accident”, *First Wallace Lecture, Dep. of Ocean Engng., Massachusetts Institute of Technology*, Cambridge, Report MITSC 81-8, Sea Grant College Program, June 1981.
3. “Safety of Offshore Structures”, Keynote Lecture, *Fourth ICASP Conference*, University of Firenze, June 1983.
4. “Reliability and Risk Analysis for Design and Operations Planning for Offshore Structures”, Keynote lecture, *ICOSSAR Conf.*, Innsbruck, Aug. 9.-13. 1993.
5. *ISOPE Conf.*, Honolulu, 1997;
6. “Dynamics of Marine Civil Engineering Structures”, *EURODYN '99*, Prague, A.A. Balkema, Rotterdam, 1999;
7. “Risk-based Design and Operations Planning of Offshore Structures”, Keynote lecture, *19<sup>th</sup> OMAE Conference*, New Orleans, February 14-17, 2000.
8. “Towards Structural Design Of High Speed Craft Based On Direct Calculations”, *FAST Conf.*, Ischia (Napoli), 2003;
9. *Keppel lecture, National University of Singapore*, 2003;
10. “Safety of Floating Offshore Structures”, *PRADS*, Lübeck-Travemünde, 2004;
11. *Keppel Lecture, National University of Singapore*, 2004;
12. “Life Cycle Management of Fatigue Reliability of Offshore Structures”, *Conf. on Structural Endurance and Safety*, Technical University of Denmark, 2004.
13. “Safety Management of Offshore Structures”, *ASME J.W. Rice Lecture, OMAE Conference*, Vancouver, 2004.
14. *MARINE*, Oslo, 2005;



15. "Recent development of structural analysis and design procedures for ships with emphasis on FPSOs". *TEAM Conference*, National University of Singapore, Singapore 5-7 December. 2005
16. "Recent Developments of Analysis and Design Procedures for Vessels for Production, Storage or Transport of Oil and Gas", *Keppel Lecture, National University of Singapore* 2005;
17. "Fatigue Reliability of Marine Structures – from Alexander Kielland Accident to Life Cycle Assessment", ISOPE Award Lecture, *ISOPE Conference*, San Francisco, 2006
18. "Recent Developments Of Structural Design Of Ships Based On Direct Calculations - with Emphasis on LNG Carriers", *NAV* 2006, Genova;
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21. *Marine* 2007, Barcelona;
22. "Life-Cycle Assessment of Marine Civil Engineering Structures", *IACCLE* 2008, Varenna.
23. *Doss*2009, Harbin Engineering University
24. "Reliability-based Life-Cycle Assessment of Cracks in Ocean Structures", *ICOSSAR2009*, Osaka
25. "Marine Structures and Operations for a Future Safe and Sustainable Use of the Oceans". *11th International Symposium on Practical Design of Ships and other Floating Structures (PRADS2010)*. 19-24 September, 2010- Rio de Janeiro, Brazil. Vol.2: pp. 1593-1626 (ISBN: 978-85-285-0141-4).
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27. "Renewable Offshore Energy, with Emphasis on Wind Energy - Opportunities and Challenges". *Peachman Lecture at the University of Michigan*. 11 April 2012 - Ann Arbor, USA.
28. "Experiences with Design and Operation of Fixed Steel Structures in the Oil and Gas Sector". *RAVE International Conference*. 8-10 May 2012 - Bremerhaven, Germany.
29. "Stochastic Dynamic Analysis of Offshore Wind Turbines in a Reliability Perspective", Keynote lecture, *AsraNet conference*, London, 2-4 July, 2012.
30. "Safety of Facilities and Operations in the Offshore Oil and Gas Energy Sector", *LRET Distinguished Lecture*, U. Aberdeen, 2012
31. "Safety of Offshore Structures", *International Conference On Safety & Reliability of Ship, Offshore & Subsea Structures*, Glasgow, UK 2014.
32. "Stochastic Dynamic Response Analysis of Offshore Wind Turbines in a Reliability Perspective", Keynote lecture, *EURODYN conf.*, Porto, 30.06-02.07.2014.
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34. "Recent developments of offshore wind turbine concepts and methods for their dynamic analysis in a reliability perspective" *An International Symposium on Structural Health Monitoring and Risk-based Reliability Management for Offshore Structures*, Nov. 11-12 2014, Taipei, R.O.C
35. "Recent development of analysis and design of Offshore Wind Turbines for deep water", *RENEW Conference*, Lisbon, Portugal, 2014.
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3. Moan, T.: "Accidental Loads", in NIF Course on Loads and Safety of Offshore Structures, Trondheim, Jan. 1985.

## 5.2. Contract Research and Development Reports (Technical reports)

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3. Moan, T. and Giske, K.: "WACUFO - Automated Calculation of Wave- and Current Forces on Three-dimensional Structures Composed of Cone Members", User's manual SK/R19, Division of Ships Structures, NTH, August 1973.
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9. Søreide, T. and Moan, T.: "Analysis of Stiffened Plates considering geometric and material non-linear Behaviour", Meddelelse. no. 31, Division of Ship Structures, NTH, April 1975.
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95. Moan, T., Økland, O.D. and Johansen, A., "Structural Assessment of MS Sleipner", SINTEF Report 700080.01 August 28 2000.
96. Ye, Naiquan and Moan, T., "Fatigue analysis of welded joints in aluminium box stiffeners", MK/R 143, Dept. of Marine Structures, NTNU, 2000.
97. Moan, T. and Amdahl, J. "Risk Analysis of FPSO, with particular emphasis in collision risk", Report 2001-RD12, American Bureau of Shipping, Houston, 2001.
98. Zhang, Bin, Kristensen, A., Moan, T. and Amdahl, J., "Ultimate Strength Analysis of Curved Bottom Panels of Inland Waterway Vessels", MK/R 150, 2001. Dept. of Marine Structures, NTNU, Trondheim.
99. Rognebakke, O.F., Faltinsen, O.M. and Moan, T., "Verification study of GTT liquid motion analysis of GTT membrane tank", MARINTEK Report MT60 F02-140, to Lloyds Register (Confidential).
100. Ørjasæther, O., Moan, T., Haagenen, P.J., Skallend, B., Pedersen, K., Rølvåg, T. and Tveiten B.W., "Fatigue of Light Metal Structures. State of the art.", SINTEF Report STF24 A02224. 2002.
101. Moan, T. and E. Ayala-Uraga, (2003). "Reliability-based assessment of FPSOs for service life extension". Technical Report OTD 2003-01, American Bureau of Shipping, Houston.
102. Moan, T., Ayala, E., Amlashi H., Dong G., (2004). "Safety formats for ultimate strength and corresponding load effect models for FPSOs". Report MK/R 153, Department of Marine Technology, Norwegian University of Science and Technology. Trondheim. Report to American Bureau of Shipping.

### 5.3 Lecture notes

Moan, T.: "Dynamic Analysis of Ship Structures", Div. of Ship Structures, NTH, 1973.

Moan, T.: "Structural Analysis with the Finite Element Method. Practical Assessment of Mathematical Model Discretization and Round-off Errors", Div. of Ship Structures, NTH, 1974.



- Moan, T., Spidsøe, N. and Haver, S.: “Analysis of Uncertainty”, (in Norwegian), Div. of Marine Structures”, 1980.(translated into English ,2000)
- Moan, T.: “Design of Offshore Structures”, Div. of Marine Structures, NTH, 1980.
- Moan, T.: “Introduction to Dynamic Analysis of Marine Structures”, (in Norwegian) Div. of Marine Structures, NTH, 1991.
- Moan, T.: “Design of Marine Structures”, Vol. 1, Univ. of Cal., Berkeley, 1994.
- Moan, T.: “Structural Reliability and Risk Analysis”, Div. of Marine Structures, NTH, 1996.
- Moan, T.: “Introduction to the Finite Element Method”, UK-00-75, Dept. of Marine Structures, NTNU, September 2000.
- Moan, T., “Accidental Actions. Background for NORSOK N-003”. MK/R-147. Dept. of Marine Structures, NTNU, January 2000.
- Moan, T.: “Design of Offshore Structures. Design Procedures and Criteria.” Vol. 1, UK-01-84, Dept. of Marine Structures, NTNU, 2001.
- Moan, T.: “Finite Element Modelling and Analysis of Marine Structures.” UK-03-98, Dept. of Marine Structures, NTNU, 2003.
- Moan, T.: “Analysis and Design of FPSOs.” Short course at the National University of Singapore, November 2005.
- Graczyk, M. and Moan, T.: “Gas carriers and ship type facilities for offshore gas production”, NTNU 2005.
- Moan, T.: “Nonlinear Stochastic Response of Marine Structures”, NTNU, 2008

## 5.4. Books

1. Moan, T. and Shinozuka, M. (eds.): “Proc. Third Int. Conf. on Structural Safety and Reliability”, Elsevier, 1981.
2. Moan, T. et al. (eds.): “Proc. Fifth BOSS Conf.”, Tapir Publ., 1988.
3. Holden, K.O., Faltinsen, O.M. and Moan, T. (eds.): “Proc. First FAST Conf.”, Tapir Publ., 1991.
4. Moan, T. et al. (eds.) “Proc. Second European Conf. on Structural Dynamics (EURODYN), A.A. Balkema publ., 1993.
5. Faltinsen, O.M., Larsen, C.M., Moan, T., Holden, K.: “Proc. Conf. on Hydroelasticity in Marine Technology”, Trondheim, May 1994, published by A.A. Balkema, 1994.
6. Moan, T. (ed.): “Teknologi for et bedre samfunn”, Tapir forlag, 1996
7. Moan, T. and Berge, S. “Proc. 13<sup>th</sup> ISSC Congress”, Elsevier publishers, Vol 1 and 2, 1997; Vol 3, 1998.
8. Næss, A. and Moan, T. Stochastic Dynamics of Marine Structures, Cambridge University Press, 2012.

## 5.5 Other publications

1. Richards, A.F., Caldwell, J.B., Moan, T. et al. “Ocean Engineering Teaching at the University Level”, Report No. 25 on Marine Science, UNESCO, Paris, 1983.
2. Moan, T., Krohn, C., Hansen, A. og Kavlie, D. “Johannes Moe - teknologen og samfunnsbyggeren”, Teknologi for et bedre samfunn, T. Moan (red.), Tapir Forlag, Trondheim, 1996, side 9 - 31
3. Moan, T. “Evaluation of Graduate Ocean Engineering Program at COPPE”, Federal University of Rio de Janeiro, Nov. 30, 1995.
4. Moan, T., “Marin teknologi” kap. i Teknologi for samfunnet, NTH i en brytningstid 1985-1995.



5. Moan, T., Flaa, D. Jemtland, T., Kavlie, D. og Kristiansen, H. "NTVA som forskningspolitisk forum", Norges Tekniske Vitenskapsakademi, Rapport no. 5, Trondheim, 1996.
6. Moan, T., Bevilacqua, L. and Estefen, S. "Evaluation of Dept. of Naval Arch. and Ocean Engng.", Univ. of Sao Paulo, May 1998.
7. Kleppe, J., Moan, T. et al. "Evaluation of the Stavanger College", Norgesnettrådet, 1999.
8. Moan, T. "Evaluation of Research of the Marine Technology Unit", University of Lisbon, 1999.
9. Moan, T. "European R & D for Marine Structures. Recent Accomplishments and Future Trends", Society of Naval Architectures of Japan. Int. Symp. on R & D, Tokyo, September 2000.
10. Digernes, T., Bratteland, E., Endal, A., Hovem, J., Kjorsvik, E., Magnussen, O., Moan, T. and Olsen, Y. (1999). "Research for competitive and sustainable development in marine sector. NTNU's research for marine sector" (in Norwegian).
11. Moan, T. "Ivar Holand", Minnetale, Det Kgl. Videnskabers Selskabs Forhandlinger, 2000
12. Bernt, J.F., Bing, J., Krüger, Mauritzen, T., Moan, T. og Ringnes, A., "Arbeidstageroppfinnelser ved Universiteter og Høgskoler", Rapport avgitt til Univ. og Høgskolerådet i Oktober 2001, Rapport 3/02, Institutt for rettsinformatikk, Univ. i Oslo, 2002.
13. Kvaal, S., Moan, T., Moe, J. and Wilhelmsen, G. "Et hav av muligheter. Fra skipsteknikk 1911 til marin teknikk 2001", Tapir Trondheim, 2003.
14. Ringnes, A., Bernt, J. F., Bing, J., Børde, C., Krüger, K., Laukholm, A., Moan, T., "Opphavsrettslige problemstillinger ved universitetene og høgskolene". Rapport angitt til Univ. og Høgskolerådet, Complex 1/04, institutt for rettsinformatikk, Universitet i Oslo, 2004.

## 6. Awards/honours

- o Fullbright Fellowship, 1976
- o First Bruce Wallace Lecture Recipient, Mass Inst. of Technology, 1981
- o Elected Member of the Norwegian Academy of Technological Sciences (1982-),
- o Vice-president 1993-1997 .
- o Keynote lecture, MAFELAP, Cranfield, 1979
- o Keynote lecture ICASP, Firenze, 1983.
- o OMAE best paper award, 1992
- o IASSAR award lecture at the Sixth ICOSSAR, 1993
- o 28<sup>th</sup> Boase lecture, Univ. of Colorado, 1994
- o Elected, Fellow, Royal Academy of Engineering, UK, 1994.
- o Elected, Member, Royal Norwegian Academy of Sciences and Letters, 1995.
- o Elected, Fellow, American Society of Civil Engineers, 1995.
- o Keynote lecture, ISOPE, Honolulu, 1997.
- o Statoil Research Prize, 1998.
- o Keynote lecture, EUROODYN, Prague, 1999
- o Keynote lecture, OMAE conference, New Orleans, 2000.
- o Elected, Fellow, Int. Assoc. of Bridge and Structural Engineers, 2001.
- o Elected, Member Norwegian Academy of Science and Letters, 2002
- o Elected, Offshore Energy Center, Hall of Fame, Houston, 2002
- o Director of Centre of Excellence, CeSOS, awarded by the Research Council of Norway, 2002
- o Called Keppel Professor at the National University of Singapore, 2002-2007.
- o Keynote lecture, FAST, Ischia (Napoli), 2003.
- o Keppel lecture, National University of Singapore, 2003.
- o Life member of ASME International 2004
- o Keynote lecture, PRADS conference, Lübeck-Travemünde, 2004.
- o Keynote lecture, OMAE conference, Vancouver, 2004.
- o Keppel Lecture, National University of Singapore, 2004.
- o ASME J.W. Rice Award, 2004.
- o Keynote lecture, TEAM conference, Singapore, 2005.
- o Keynote lecture, MARINE conference, Oslo, 2005.
- o Keppel Lecture, National University of Singapore 2005.
- o ISOPE Award, 2006 (the first recipient of the ISOPE award).
- o SOBENA Award, and keynote lecture at the SOBENA conference, Rio de Janeiro, 2006
- o Keynote lecture, NAV conference, Genova, 2006.
- o Keynote lecture, ASRA Net conference, Glasgow, 2006
- o (The first recipient of) Petroleum Safety Authority Award, 2006



- J. Structures and Infrastructures Engineering best paper award, 2006.
- Keppel Lecture, National University of Singapore 2005.
- Keynote lecture, MARINE conference, Barcelona, 2007
- J. Ships and Offshore Structures, best paper award (with M. Graczyk and M.K. Wu), 2007.
- Keynote lecture, IACCLE conference, Varenna, 2008.
- Keynote lecture, Doss2009 conference, Harbin
- Keynote lecture, ICOSSAR2009 conference, Osaka
- TRANS-NAV Conference, Gdynia, Best paper award (with K.G. Aarsæther), 2009
- Honorary Professor, Harbin Engineering University, 2009.
- Visiting professor, Zhejiang University, Hangzhou, 2010
- Keynote lecture, PRADS conference, Rio de Janeiro, 2010
- Keynote lecture, MTEC conference, Singapore, 2011
- The Peachman lecture, U. Michigan, 2012.
- Keynote lecture, RAVE conference, Bremerhafen, May 2012.
- Keynote lecture, ASRANet conference, London, 2012.
- Appointed Academic Master (« visiting professor ») at Dalian University of Technology
- Lloyds Register Educational Trust (LRET) Inaugural Distinguished Lecture, U. Aberdeen, 2012
- Keynote lecture. *International Conference on Safety & Reliability of Ship, Offshore & Subsea Structures*, Glasgow, UK
- Keynote lecture, *EURODYN conf.*, Porto, 30.06-02.07.2014.
- Keynote lecture API, Houston, USA, Sept. 14-16.2014
- Keynote lecture. *An International Symposium on Structural Health Monitoring and Risk- based Reliability Management for Offshore Structures*, Nov. 11-12 2014, Taipei, R.O.C
- Keynote lecture *RENEW Conference*, Lisbon, Portugal, 2014.
- Dr. honoris Causa, Aalto University, Helsinki, 2014.
- *Distinguished lecture*, Tsinghua University; 2015-10-18.
- Keynote lecture *International Symposium on Reliability of Engineering Systems*; Hangzhou, China, 2015
- Keynote *5th International Symposium on Life-cycle Civil Engineering*; TUDelft, Delft, NL 2016-10-16 - 2016-10-19
- Davidson Medal awarded by the Soc. of Naval Architecture and Marine Engng., USA 2016.
- Keynote Int. Conf. on Wind Energy Harvesting, April 20-21 2017. Winercoast17, Coimbra, Portugal. ISBN 978-989-99226-4-8

## 7. Patents

Moan, T.; Muliawan, M.; Karimirad, M.; Gao, Z. A Floating Wind Turbine with Wave Energy Converter. [Patent] Patentnr./Lisensnr.: 334380 Registrert 2014-02-24

## 8. PhD Graduates Supervised

1. Nordsve, Nils T.: "Finite Element Collapse Analysis of Structural Members Considering Imperfections and Stresses due to Fabrication." 1980.
2. Fylling, Ivar J.: "Analysis of Towline Forces in Ocean Towing Systems." 1980.
3. Haver, Sverre: "Analysis of Uncertainties related to the Stochastic Modelling of Ocean Waves." 1980.
4. Odland, Jonas: "On the Strength of Welded Ring Stiffened Cylindrical Shells Primarily subjected to Axial Compression." 1981.
5. Engesvik, Knut: "Analysis of Uncertainties in the Fatigue Capacity of Welded Joints." 1982.
6. Mo, Olav: "Stochastic Time Domain Analysis of Slender Offshore Structures". 1983.
7. Soares, C. Guedes: "Probabilistic Models for Load Effects in Ship Structures". 1983.
8. Mørch, Morten: "Motions and Mooring Forces of Semi Submersibles as determined by Full-scale Measurements and Theoretical Analysis". 1984.
9. Engseth, Alf G.: "Finite Element Collapse Analysis of Tubular Steel Offshore Structures". 1985.
10. Baadshaug, Ola: "Systems Reliability Analysis of Jacket Platforms". 1985.
11. Hessen, Gunnar: "Fracture Mechanics Analysis of Stiffened Tubular Members". 1986.
12. Taby, Jon: "Ultimate and Post-ultimate Strength of Dented Tubular Members". 1986.



13. Wessel, Heinz-Joachim: "Fracture Mechanics Analysis of Crack Growth in Plate Girders." 1986.
14. Leira, Bernt Johan: "Gaussian Vector-processes for Reliability Analysis involving Wave-Induced Load Effects". 1987.
15. Jiao, Guoyang: "Reliability Analysis of Crack Growth under Random Loading considering Model Updating." 1989.
16. Olufsen, Arnt: "Uncertainty and Reliability Analysis of Fixed Offshore Structure". 1989.
17. Wu, Yu-lin: "System Reliability Analyses of Offshore Structures using improved Truss and Beam Models". 1989.
18. Farnes, Knut-Arild: "Long-term Statistics of Response in Non-linear Marine Structures. 1990.
19. Hoen, Christopher: "System Identification of Structures Excited by Stochastic Load Processes". 1991.
20. Haugen, Stein: "Probabilistic Evaluation of Frequency of Collision between Ships and Offshore Platforms." 1991.
21. Marley, Mark J.: "Time Variant Reliability under Fatigue Degradation." 1991.
22. Bessason, Bjarni: "Assessment of Earthquake Loading and Response of Seismically Isolated Bridges", 1992.
23. Dalane, J.I.: "System Reliability in Design and Maintenance of Fixed Offshore Structures", 1993.
24. Karunakaran, Daniel N.: "Nonlinear Dynamic Response and Reliability Analysis of Drag-dominated Offshore Platforms", 1993.
25. Bech, Sidsel May: "Experimental and Numerical Determination of Stiffness and Strength of GRP/PVC Sandwich Structures", 1995.
26. Hovde, Geir Olav: "Fatigue and Overload Reliability of Offshore Structural Systems, considering the Effect of Inspection and Repair", 1995.
27. Wang, Xiaozhi: "Reliability Analysis of Production Ships with Emphasis on Load Combination and Ultimate Strength", June 1995.
28. Hellan, Øyvind: "Nonlinear Pushover and Cyclic Analyses in Ultimate Limit State Design and Reassessment of Tubular Steel Offshore Structures", 1995.
29. Hermundstad, Ole Andreas: "Theoretical and Experimental Hydroelastic Analysis of High Speed Vessels", February 1996.
30. Eknes, Monika Løland: "Escalation Scenarios Initiated by Gas Explosions on Offshore Installations". 1996.
31. Igland, Ragnar Torvanger: "Reliability Analysis of Pipelines during Laying, Considering Ultimate Strength under Combined Loads". 1997.
32. Azadi, Mohammad R. Emami: "Analysis of Static and Dynamic Pile-Soil-Jacket Behaviour". 1998.
33. Videiro, Paulo Mauricio: "Reliability Based Design of Marine Structures". 1999.
34. Tveiten, Bård Wathne: "Fatigue Assessment of Welded Aluminium Ship Details". 1999.
35. Sagli, Gro: "Model uncertainty and simplified estimates of long term extremes of hull girder loads in ships". 2000.
36. Wang, Lihua: "Probabilistic Analysis of Nonlinear Wave-induced Loads on Ships". 2001.
37. Kristensen, Odd H.H. : "Ultimate Capacity of Aluminium Plates under Multiple Loads, Considering HAZ properties". 2001-11-07.
38. Heggelund, S.E. "Calculation of Global Design Loads and Load Effects in Large High Speed Catamarans". 2001.
39. Økland, O.D.: "Numerical and experimental investigation of whipping in twin hull vessels exposed to severe wet deck slamming", 2002.
40. Ge, Chunhua: "Global Hydroelastic Response of catamarans due to Wetdeck Slamming", 2002.
41. Chen, Haibo: "Probabilistic evaluation of FPSO-tanker collision in tandem offloading operation", 2003.
42. Bjørheim, Lars G.: "Failure assessment of long through thickness fatigue cracks in ship hulls", 2006
43. Storhaug, Gaute: "Experimental investigation of wave induced vibrations and their effect on the fatigue loading of ships", 2007.
44. Gao, Zhen: "Stochastic response analysis of mooring systems with emphasis on frequency-domain analysis of fatigue due to wide-bandresponse processes", 2008.
45. Ye, Naiquan: "Fatigue assessment of aluminium welded box-stiffener joints in ships", 2008.
46. Drømmen, Ingo: "Experimental and numerical investigation of nonlinear wave-induced load effects in containerships considering hydroelasticity", 2008.
47. Graczyk, Mateusz: "Experimental investigation of sloshing loading and load effects in membrane LNG tanks subjected to random excitation", 2008.
48. Taghipour, Reza: "Efficient prediction of dynamic response for flexible and multi-body marine structures", 2008.





49. Amlashi, Hadi: "Ultimate Strength and Reliability-based Design of Ship Hulls with Emphasis on Combined Global and Local Loads", 2009.
50. Ayala-Uraga, Efren: "Reliability-based Assessment of Deteriorating Ship-shaped Offshore Structures", 2009.
51. Hals, Jørgen: Modelling and Phase Control of Wave-Energy Converters. 2010
52. Shu, Zhi Uncertainty Assessment of Wave Loads and Ultimate Strength of Tankers and Bulk Carriers in a Reliability Framework. 2010
53. Jia, Huirong: Structural Analysis of Intact and Damaged Ships in a Collision Risk Analysis Perspective 2011
54. Karimirad, Madjid: Stochastic Dynamic Response Analysis of Spar-Type Wind Turbines with Catenary or Taut Mooring Systems. 2011
55. Yang, Limin: Stochastic Dynamic System Analysis of Wave Energy Converter with Hydraulic Power Take-Off, with Particular Reference to Wear Damage Analysis, 2011.
56. Su, Biao Numerical Predictions of Global and Local Ice Loads on Ships. 2011
57. Aarsæther, Karl Gunnar: Modeling and Analysis of Ship Traffic by Observation and Numerical Simulation. 2011
58. Chen, Qiaofeng: Ultimate Strength of Aluminium Panels, considering HAZ Effects. 2011.
59. Kota, Ravikiran S.: Wave Loads on Decks of Offshore Structures in Random Seas, 2012
60. Dong, Wenbin: Time-domain Fatigue Response and Reliability analysis of offshore wind turbines with emphasis on welded tubular joints and gear components, 2012
61. Zhu, Suji: Investigation of Wave-induced Nonlinear Load Effects in Open Ships considering Hull Girder Vibrations in Bending and Torsion, 2012
62. Li Zhou: Numerical and Experimental Investigation of Stationkeeping in Level Ice, 2012
63. Kurniawan, Adi: Modelling and geometry optimisation of wave energy converters, 2013
64. Xing, Yihan: Modelling and analysis of gearbox in floating spar type wind turbine, 2013
65. Etemaddar, Mahmoud: Load and response analysis of wind turbines under atmospheric icing controller system faults with emphasis on spar type wind turbines, 2013
66. Rogn, Øyvind: Numerical and Experimental Investigation of a Hinged 5-Body Wave Energy Converter, 2014
67. Bachynski, Erin Elizabeth.: Design and Dynamic Analysis of Tension Leg Platform, 2014
68. Tan, X: Numerical investigation of ship's continuous-mode icebreaking in level ice, 2014.
69. Muliawan, Made Jaya: Design and Analysis of Combined Floating Wave and Wind Power Facilities, with Emphasis on Extreme Load Effects of the Mooring System, 2014
70. Jiang, Zhiyu: Long-term analysis of wind turbines with an emphasis on fault and shutdown conditions, 2014.
71. Kvittem, Marit Irene: Modelling and response analysis for fatigue design of a semi-submersible wind turbine, 2014.
72. Wang, K. Modelling and Dynamic Analysis of a Semi-submersible Floating Vertical Axis Wind Turbine, 2015
73. De Vaal, Jacobus Aerodynamic Modelling of Floating Wind Turbines 2015
74. Nejad, Amir Rasekhi Dynamic Analysis and Design of Gearboxes in Offshore Wind Turbines in a Structural Reliability Perspective 2015
75. Acero, Wilson Ivan Guachamin Assessment of Marine Operations for Offshore Wind Turbine Installation with Emphasis on Response-based Operational Limits 2016
76. Cheng, Zhengshun Integrated Dynamic Analysis of Floating Vertical Axis Wind Turbines 2016
77. Lin, Li Dynamic Analysis of the Installation of Monopiles for Offshore Wind Turbines 2016
78. Wan, Ling Experimental and Numerical Study of a Combined Offshore Wind and Wave Energy Converter Concept 2016
79. Wu, Xiaopeng Numerical Analysis of Anchor Handling and Fish Trawling Operations in a Safety Perspective 2016
- 80.

Currently dr. Moan is supervising about 10 PhD candidates beyond those listed above..

## 9. Educational activities

Dr. Moan has especially engaged in developing a course program relating to design of offshore structures, dynamics of multi-body and elastic structures, statistics and probabilistic methods, and reliability analysis.



More than 450 MSc candidates have been supervised during their thesis work.

## 10. Host of Visiting Professors/Research Fellows at NTH (stays of 3 months and more)

Prof. Jiao de Oliveira, MIT, "Impact Resistance of Tubular Members", Summer 1979  
Prof. Kim Vandiver, MIT, "Stochastic Dynamic Analysis of Offshore Structures", Summer 1980  
Prof. Jizu Xu, Tianjin Univ., "Dynamic analysis of platforms subjected to ice-loads", 1979-81.  
Prof. Nie Wu, Harbin Univ., "Dynamic analysis of jack-up platforms" 1982-83.  
Dr. Sherif Rashed, CRC/Osaka Univ., "Structural Unit. Method as Applied to Frame Works", 1979-1980.  
Prof. Tetsuya Yao, Hiroshima Univ., "Ultimate Strength Analysis of Structures", 1984 – 1985  
Dr. Masataka Katayama, CRC, Osaka, Collapse Analysis of Structures, 1985-86  
Prof. Lieu Teh-fu, Tianjin Univ., "Uncertainty Analysis of Wave Loading on Jackets" 1988-1989.  
Prof. Masahiko Fujikubo, Hiroshima Univ., "Fracture Strength of Welded Plates", 1988 - 1989  
Prof. H. Okada, Osaka prefecture University, "Reliability Analysis of Structures", 1984 - 1985  
Prof. G.D. Panagiotopoulos, Univ. Patras, "Analysis of Stiffened Panels", 1988 -1989  
Prof. E.E. Theotokoglou, Univ. Athens, "Analysis of Composite Sandwich Tee-joints", 1989 -1990, Summer 1993.  
Dr.ing. Wu Yu Lin, Jiao Tong. Univ., Shanghai, "Systems Reliability Analysis", 1990.  
Prof. Ian Jordaan, Univ. of Newfoundland, St. John's, "Ice loads and response, and risk assessment", Summer 1990.  
Prof. Segen F. Estefen, Ph.D., Univ. Rio de Janeiro, "Ultimate Strength of Tubulars Subjected to Pressure, Tension and Bending", 1991-92.  
Dr. Yong Bai, Jiao Tong Univ. Shanghai/Hiroshima Univ., "Ultimate Collapse of Tubular Members", 1991-92, Summer 1993.  
Prof. Dan Frangopol, Univ. of Colorado, Boulder, "Systems Reliability Analysis", Summer 1991, Summer 1992.  
Lecturer Dr. Mingkang Wu, Jiao Tong Univ., Shanghai, "Hydroelastic Analysis of High Speed Vehicles", 1992-1996.  
Lecturer Xiaomin Li, Tianjin Univ., "Structural Analysis of Pipelines", 1992-93.  
Dr. Wei-Liang Jin, Zhejiang University, "Structural Reliability Analysis", 1994-95  
Dr. Christina Wang, NTNU/Kvaerner, "Ultimate strength of aluminium plates", 1995 (6 months)  
Prof. Achintya Haldar, Univ. of Arizona, Tucson, "Reliability-Based Inspection Planning", 1995  
Dr. Ruxin Song, Jiao Tong University, Shanghai, "Reliability-Based Inspection Planning", 1996- 1998.  
Dr. Yufeng Zha, Hiroshima University, "Ultimate strength of aluminium structures", 1998-2001.  
Professor Paul Grundy, Monash University, "Ultimate Collapse Strength of Steel Structures", 1999.  
Dr. Xuekang Gu, CSSRC, "Nonlinear wave loading on ships", 1999-2000, 2004.  
Dr. Gro Sagli Baarholm, NTNU, "Probabilistic Modelling of Multiple Loads on Ships" 2000-2002.  
Dr. Ole Hermundstad, MARINTEK "Slamming loads on ship structures" (2003 - )  
Dr. MingKang Wu, MARINTEK "Hybrid frequency-time domain simulation of ship response" (2003 - )  
Prof. L. Kafatygiotis, Hong Kong, "Monte Carlo Simulation of ...." 2004  
Dr. X.Y. Zheng, National University of Singapore, "Frequency domain second order stochastic analysis", 2005-2007.  
Dr. Wenbo Huang, Shanghai Jiao Tong University, "Stochastic load combination of extreme and fatigue loading", 2004-2006.  
Dr. Xiaoping Huang, Shanghai Jiao Tong University, "Mean stress effect on fatigue", 2005- 2006.  
Dr. Xujun Chen, CSSRC, "Second Order Analysis of VLFS", 2005.  
Prof. H. Kawabe, Tokai University, "Effect of ship operation on wave-induced loads", 2005.  
Dr. S. Fu, Shanghai Jiao Tong University, 2005 –2007  
Dr. Junji Sawamura, Osaka University, 2006-2008  
Dr. Kazuhiro Iijima, Osaka University, 2007-08.  
Dr. Z. Gao, NTNU, 2008-  
Dr. A. Babarit, Ecole Centrale, Nantes, Wave energy converters, 2010-2011  
Dr. N. Saha, Indian Institute of Science, 2008-2010, 2011  
Dr. Y. He, Zhejiang University, 2011-2012  
Professor Tanaka, Hiroshima University, 2011-2012  
Dr. Limin Yang, NTNU, 2011-2013  
Dr. Huirong Jia, NTNU, 2011-2012  
Dr. Madjid Karimirad, NTNU, 2011-2012  
Dr. Biao Su, NTNU, 2011-2012  
Dr. X. Ye, Harbin Engineering University, 2013-2014  
Dr. C. Michailides, U. Thessaloniki, 2013-2015



Dr. Nianxin Ren, Dalian University of Technology, 2013-2014  
Dr. Ali Nematbakhsh Worcester Polytechnic Institute, USA,, 2013-2015  
Dr. Wei Shi, Pohang University of Science and Technology, Korea, 2014-2016  
Assoc. prof. Puyang Zhang School of Civil Engineering, Tianjin University, 2015-2016  
Dr. Wenhua Wang, Dalian U. of Technology, Dalian, 2015-2016  
Dr. Zhengshun Cheng, NTNU, 2016-2018  
Dr. Zhengshun Cheng, NTNU, 2016-2018

## 9. Doctoral Committees and Assessment of professorships

(last 20 years)

Professorship, Dept. Naval Arch. and Ocean Eng., Univ. of California, Berkeley, 1995, 1996, 1997.  
Professorship, FRP Structures, Dept. Mech. Engng., NTNU, 1991.  
Professorship, Meerestechnik, Univ. Hamburg-Harburg, 1991.  
Professorship, Struct. Engng., Dept. of Civil Engng., NTNU, 1994.  
Dr. thesis, Dept. of Civil Engng., National Univ. of Singapore, 1995.  
Professorship, Dept. of Naval Architecture, National Univ. of Athens, 1999.  
Professorship, Dept. of Naval Architecture, Hiroshima University, 1999.  
Professorship, Dept. of Naval Arch. & Ocean Engng., Glasgow Univ., 1999.  
Dr. thesis, Faculty of Mechanical Engng., NTNU, 2000.  
Professorship of Naval Architecture, DTU, Lyngby, 2001.  
Professorship of Offshore Structures, University College, Stavanger, 2003  
Professorship of Material Technology, NTNU, 2003  
Professorship, Dept. of Naval Architecture, National University, Athens, 2003  
Professorship of Engineering Science, Oxford University, UK, 2004.  
Professorship, Marine Science, Southampton University, UK, 2004.  
Dr. thesis, Delft University of Technology, 2004.  
Dr. thesis, Technical University of Denmark, 2004.  
Dr. thesis, NTNU, 2005.  
Dr. thesis, Technical University of Denmark, 2005.  
Dr. thesis, University of Stavanger, 2006.  
Professorship in materials science, NTNU, 2007.  
Professorship in structural engineering, Harbin Engineering University, 2007.  
Professorship in naval architecture and ocean engineering, University of Michigan, 2008.  
Dr.thesis, Chalmers University of Technology, 2009.  
Professorship DTU, wind energy, 2011  
Professorship, Aalto University, 2011  
Dr. thesis, Indian Institute of Technology, New Dehli, 2012  
Professorship, Instituto Superior Tecnico. Lisbon, 2013  
Dr. thesis, National University of Singapore, 2014  
Dr.thesis, Technical University of Denmark, 2014  
Dr.thesis, Cranfield University, UK, 2014.  
Promotion to distinguished professorship, Shanghai JiaoTong University, China, 2015.  
Dr.thesis, U. Edinburgh, UK, 2016.  
Professorship, Tsinghua University, China, 2017.  
Professorship, Instituto Superior Tecnico. Lisbon, 2017  
Professorship, UPC, Barcelona, 2017

## 10. Other presentations

*Extensive presentations:*

“Design of Offshore Structures”, Trondheim, RWTH, Aachen, 1979.  
“Safety of Offshore Structures - after the Alexander L. Kielland Accident”, First Wallace Lecture, Dept. of Ocean Engng., Mass. Inst. of Technology, April 1981.  
“Design of Offshore Structures”, Tianjin University, Nov. 1981.  
“Advanced University Curricula in Ocean Engineering and Related Fields”, UNESCO, Paris, 11-16. Oct. 1982.  
“Analysis and Design of Marine Structures with respect to Progressive Failure”, CRC/Osaka 1985.  
“Fatigue Design of Marine Structures”, Century Research Corp. (CRC), Osaka/Tokyo, 1985.



- “Reliability of Offshore Structures”, IEOT, Oil and Natural Gas Commission, India, January 6.-19., 1991.  
“Analysis and Design of Floating Production Systems”, Univ. of Texas, Austin, TX, Oct. 1991.  
“Safety and Reliability of Marine Structures”, Tokyo/Osaka/Hiroshima/Fukuoka Univ. 1995  
“Evaluation of Engineering Schools”, Federal Univ. of Rio de Janeiro, Oct. 1995.  
“Why Buildings Collapse: Failure by Design”. Alexander Kielland-accident. Television Presentation, ITV, UK, 2001-10-20.  
“Floating production systems”, National University of Singapore, July 15-17, 2003 and Nov. 2004.  
“Ships for production and transport of oil and gas”, National University of Singapore, Nov. 28-29, 2005.  
“Risk and reliability analysis of ships and offshore structures”, Korean Register of Shipping, Daejeon, May 2012  
“Marine Structures and Operations for the Future” Dalian University of Technology, 2012

*Numerous guest lectures in Hamburg/Aachen, Germany; London/Cranfield, UK; Udine, Italy; UCB Berkeley, MIT Cambridge, Mass./Austin/Boulder/Houston/Tulsa, San Francisco, Santa Barbara, USA; Osaka/Tokyo/Hiroshima/Fukoka, Japan; Tianjin/Shanghai, China; Rio de Janeiro, Brasil; Melbourne, Australia.*

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