NTNU
Department of Marine Technology

DEPARTMENT OF MARINE TECHNOLOGY

Annual report 2018
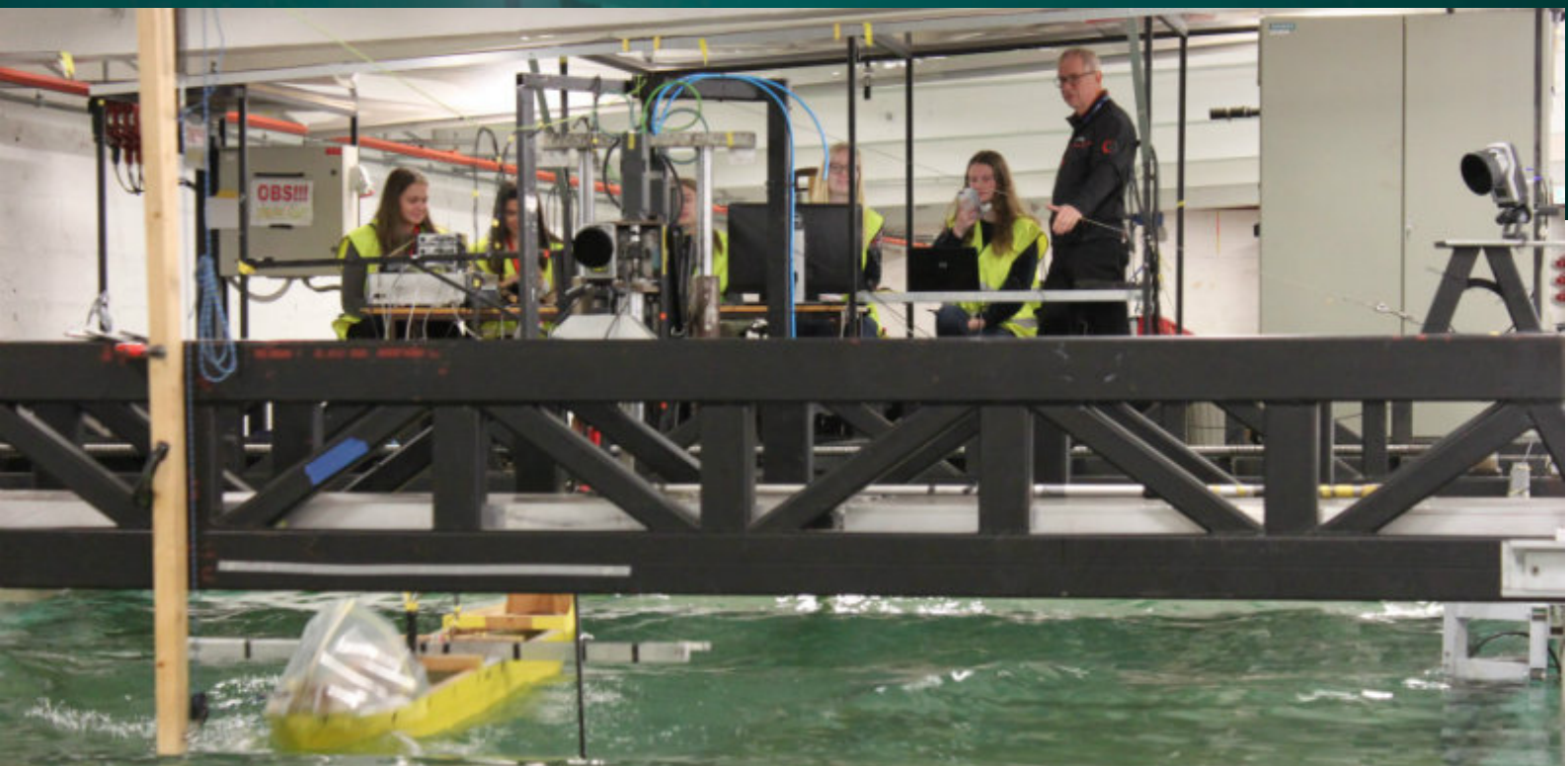
Contents

Facts and figures

The Department of Marine Technology (IMT) at NTNU educates and conducts research about methods and techniques which facilitate the assessment and development of technical and operational solutions for Norway's biggest export industries: oil and gas extraction at sea, ship technology with corresponding equipment industry, fisheries technology and aquaculture technology.

The research and education at IMT emphasize the development of environmentally friendly and energy-efficient solutions within these areas.

Staff:

20 professors
7 associate professors
2 assistant professors
17 adjunct professors
5 adjunct associate professors
9 researchers
11 postdocs
10 professors emeritus
111 PhD candidates
11 administrative staff
17 technical staff
3 apprentices

Students:

Close to 600 students

Graduates 2018:

23 PhD graduates
116 graduated master students

Budget 2018:

130 MNOK

Scientific Publications in 2018:

Academic journal articles: 176

Academic conferanse lectures: 63

Books: 4

Book chapters: 88

Studies at the Department:

Siv.ing. studies

- Marine technology (MSc, 5 years)
- Marine technology (MSc, 2 years)

International master programs

- Marine Technology (Master of Science, 2 years)

PhD studies

- PhD in marine technology (PhD degree, 3 years)

News

Here are some of the news stories from 2018. For more news see the department pages.

Intelligent robots as a tool to understand climate change in the Arctic Ocean

In 2018 several scientists at the department of Marine Technology participated in an expedition to map the Arctic Ocean fronts.

The climate is changing fast, especially in the Arctic Ocean where sea-ice extent continues to decease. Understanding the effects of the changing climate on the fragile Arctic ecosystem is of utmost importance, as changes in sea-ice cover will have direct consequences on the ecosystem. The goal of the group from the Applied Underwater Robotics laboratory (AUR-lab) at NTNU (Norwegian University of Science and Technology) was to test and collect data using a method for adaptively sampling fronts. Fronts are characterized by large temperature and salinity changes over relatively short distances, which can indicate layers of different water masses. Tracking and sampling of fronts are important to increase the understanding of different oceanographic processes, but time and resources are limited, and the use of the available platform must therefore be optimized.

This is where adaptive path planning comes into play – instead of providing a complete coverage of an area, the vehicle will be attracted towards areas of interest, and increase the time spent sampling the important processes. This saves time and resources and allows researchers to gather the needed data much faster. You can read more about the expedition at our TechZone blog.

IMT-students win international shipbuilding competition

Six students from the Department of Marine Technology at NTNU took first place this year, at the Dr. James A. Lisnyk Ship Design Competition 2018. Andreas Malm Justad, Bjørn Børresen, Erik Ferdinand Jebsen Vinje, Ingeranne Strøm Nakstad, Ola Gundersen Skåre, and Tone Alexandra Dale designed a ship for efficiently transporting hydrogen over large distances, while at the

same time keeping costs and emissions down.

With Hydrogen playing a crucial role in the transition to a society less dependent on fossil fuel, it is imperative to find efficient ways of transporting it from where the hydrogen is produced, to the place where the energy is needed.

As of today, there are few reliable ways to use ships for this purpose, mostly because of the difficulty of keeping the hydrogen at temperatures at -253 degrees celsuius. However, the design that the students came up with, solves this problem, and allows for long-range ship-transportation with minimal loss of energy. This will again allow nations, who want to transit to hydrogen, to get their Hydrogen from the most environmentally friendly source available, such as Norwegian hydroelectric energy.

One of the designers, Erik Ferdinand Jebsen Vinje, thinks that being a student confers certain advantages to the whole design process.

– Being a student, there are no boundaries, no limits set by anyone. This gave us the liberty to explore new ways to take the challenges head on. The project has been challenging, but also very rewarding. It has been very interesting trying to find new solutions to problems with no explicit answers, says Vinje.

The Lisnyk Student Ship Design Competition challenges groups of young people to design theoretical but practical cutting-edge vessels. The competition is Open to the world's colleges and universities supporting maritime careers, and the program is meant to foster teamwork and learning through competition.

Collaboration for a sustainable future

Photo:Maren Agdestein, NTNU

The department of Marine Technology at NTNU and the University of Michigan have entered into a partnership program that is looking at offshore wind turbines, and energy systems for ships, ports, and offshore structures.

The project aims to share experience and develop proposals for further collaboration. It also aims to boost the educational offerings in the topics of stochastic dynamics and multidisciplinary design optimization (MDO) for offshore wind turbines, and energy systems for ships, ports, and offshore structures.

Both the development of offshore wind turbines and more efficient energy systems for ships, ports and other marine structures, are of vital importance if one is the solve some of the problems facing the world, like climate change and energy production. It is the hope that this collaboration will help strengthen today's research activities to solve these challenges as well as educate engineers and scientists to address the challenges of tomorrow.

The collaboration will entail regular workshops and seminars, joint applications for research funding, bilateral research exchanges, joint publications, and mutually beneficial course development at the bachelor and master's levels.

The Ocean Space Centre moves closer to realisation

2018 was an important year for the Ocean Space Centre project. The project passed the cost-benefit analysis and was deemed economically profitable, and the Norwegian Ministry for Trade, Industry and Fisheries also announced that the project would go on to the OFP phase in 2019.

When completed, the Ocean Space Centre will be a modern and forward-looking centre for science, innovation, and education within the ocean space field.

Planning for Ocean Space Centre started in 2005, and since then different concepts have been considered. In March 2018, NTNU and SINTEF put forward a modified concept, which has now passed government control.

– In order to remain competitive, we have to produce graduates with the relevant knowledge and skill necessary for tomorrow's ocean industries. Solutions that allow education to work together with research is vital, and together with SINTEF, we now have a concept that delivers on this front. We are happy that this has been emphasised when the project's benefits for society was considered, said rector at NTNU, Gunar Bovim.

If all goes as planned building work on the centre will start in 2022.

Off to a flying start
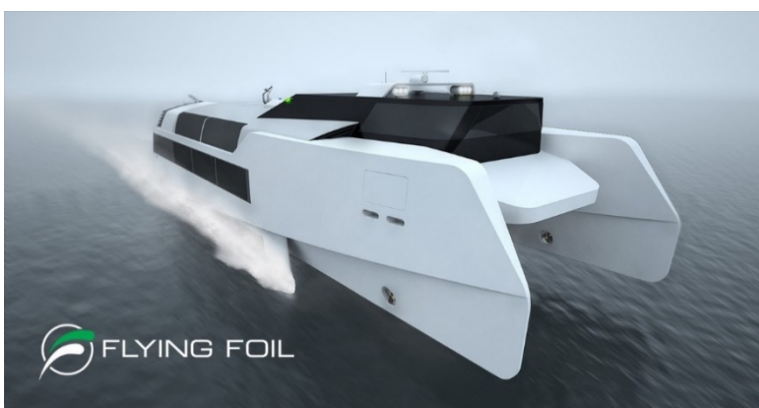
Flying Foil was launched as an independent company in 2018.

A spin off from the Department of Marin Technology at NTNU, the inventors and founders, John Martin Kleven Godø and Jarle Vinje Kramer, wishes to reduce both operating costs and emissions from high-speed marine vessels by using hydrofoils.

The company develops technology for all types of high-speed boats and ships, but its current focus is on high-speed passenger ferries. Flying Foil also secured funding from PILOT-E in 2018, that will greatly help finance the construction of an emission free high-speed passenger ferry.

Winners of the Moan-Faltinsen Best Paper award
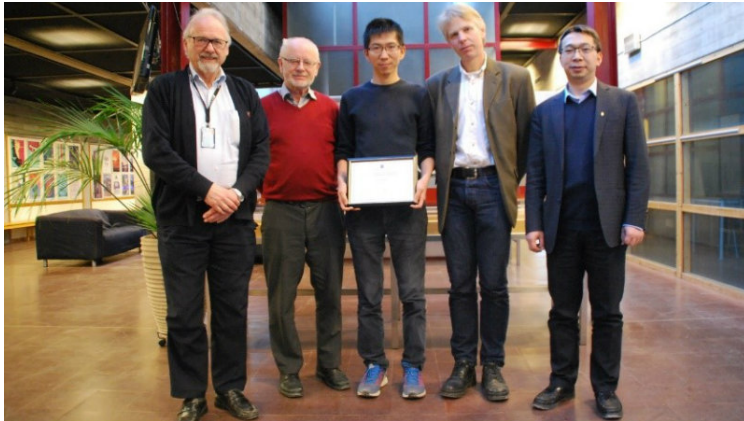
2018 marked the fourth year for the Moan-Faltinsen Best Paper Award.

Zhaolong Yu, from NTNU, won the Moan-Faltinsen Best Paper Award on Marine Structural Mechanics/Dynamics 2018, and Guoqiang Tang, from Dalian University of Technology, won the Moan-Faltinsen Best Paper Award on Marine Hydrodynamics 2018.

A new international selection committee was established this year to evaluate the submitted papers, which consists of Prof. Masahiko Fujikubo and Prof. Masashi Kashiwagi, both from Osaka University.

The winner of the Moan-Faltinsen Best Paper Award on Marine Structural Mechanics/Dynamics 2018 is Zhaolong Yu, from NTNU, and the awarded paper is 'Large Inelastic Deformation Resistance of Stiffened Panels Subjected to Lateral Loading', published in Marine Structures and co-authored by Jørgen Amdahl, and Yanyan Sha. The winner was selected by Prof. Masahiko Fujikubo and Prof. Zhen Gao at NTNU.

The winner of the Moan-Faltinsen Best Paper Award on Marine Hydrodynamics 2018 is Guoqiang Tang, from Dalian University of Technology, and the awarded paper is 'Effect of Oscillatory Boundary Layer on Hydrodynamic Forces on Pipelines', published in Coastal Engineering and co-authored by Liang Cheng, Lin Lu, Yunfei Teng, Ming Zhao and Hongwei An. The winner was selected by Prof. Masashi Kashiwagi and Prof. Marilena Greco at NTNU.

Appendices

Department economy

External project activity

External
project activity 2018

- EU MNOK 3,4
- NRC MNOK 27,8
- Other externally projects MNOK 28,0
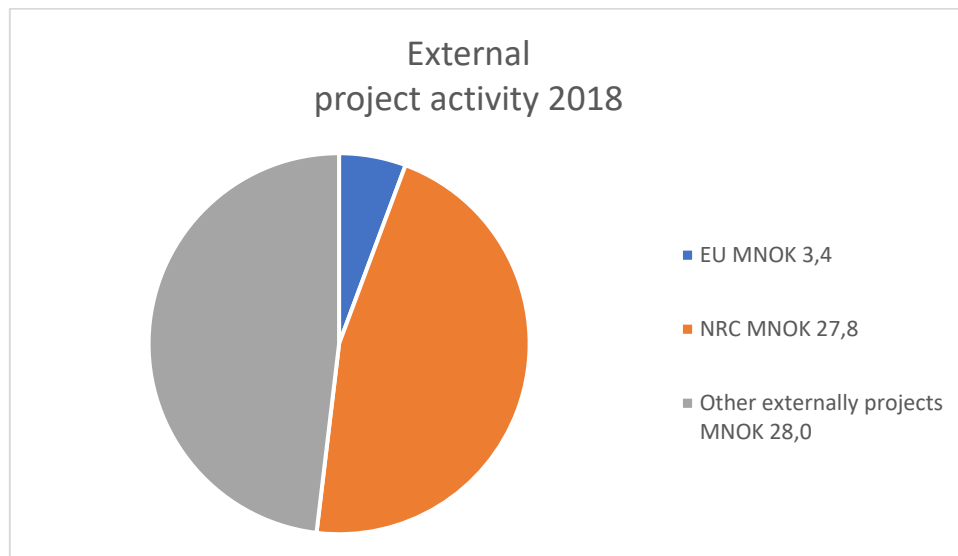
** Other externally funded projects: other private and public contributors for both commissioned and sponsored projects. Our research centers (SFF, SFF) are well represented in this category.

Total cost allocation 2018

Total cost allocation 2018

- Salary and social costs MNOK 67,7
- Other operating costs MNOK 24,8
- Investments MNOK 9,1
- Own financing MNOK 20,1
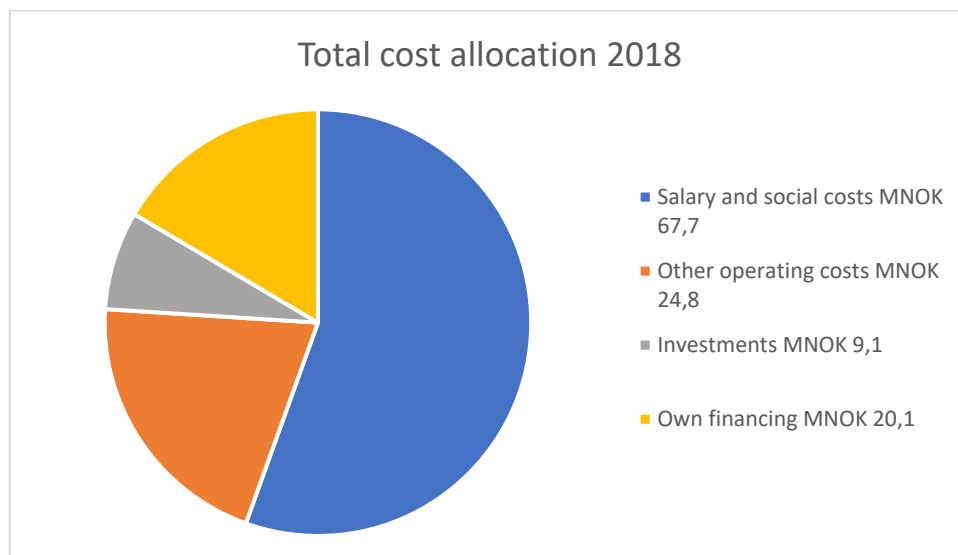
Salary and social costs cover more than 55% of total costs.

Total income 2018

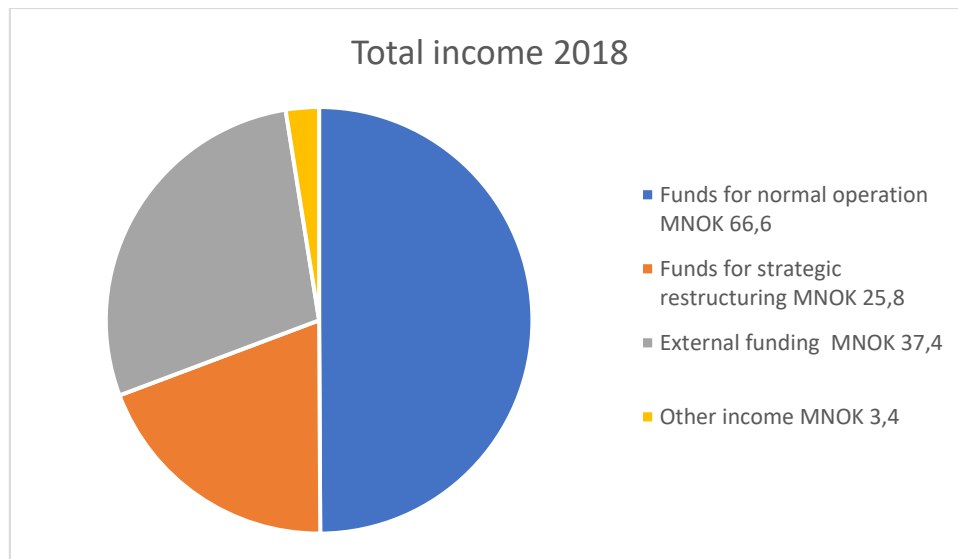Income is generated from two primary sources:

- funding from the government for normal operations and strategic restructuring, and
- external funding from private and public contributors for both commissioned and sponsored projects.

Staff, projects and other useful links

Information on the Staff at the department can be found at the department webpages here

Information on the department's research projects and laboratories can be found here

More information on our education programs can be found here

Publications

Find all the department publications for 2018 at Cristin here

Book publications

Haugen, Stein; Barros, Anne; van Gulijk, Coen; Kongsvik, Trond; Vinnem, Jan Erik. Safety and Reliability – Safe Societies in a Changing World. Proceedings of ESREL 2018, June 17-21, 2018, Trondheim, Norway. CRC Press 2018 (ISBN 9781351174657) 3234 s. NTNU UiT

Moan, Torgeir; Nejad, Amir Rasekhi. Proceedings of the 3rd Offshore Structural Reliability Conference (OSRC2016). Trondheim: Norges teknisk-naturvitenskapelige universitet 2018 (ISBN 978-82-691120-0-9) 495 s.NTNU

Steen, Sverre; Koushan, Kourosh. Journal of Marine Science and Engineering, Special Edition Marine Propulsors. MDPI 2018 (ISBN 978-3-03897-202-0) 341 s. OCEAN NTNU

Zhang, Qin; Skjetne, Roger. Sea Ice Image Processing with Matlab. Taylor & Francis 2018 (ISBN 9781138032668) 272 s. NTNU

Journal publications

Ahmad, Nadeem; Bihs, Hans; Myrhaug, Dag; Kamath, Arun; Arntsen, Øivind Asgeir. Three-dimensional numerical modelling of wave-induced scour around piles in a side-by-side arrangement. *Coastal Engineering* 2018; Volum 138. s.132-151. NTNU

Alsos, Hagbart Skage; Faltinsen, Odd Magnus. 3D motion dynamics of axisymmetric bodies falling through water. *Ocean Engineering* 2018; Volum 169. s.442-456. OCEAN NTNU

Ambati, Marreddy; Kiendl, Josef; De Lorenzis, Laura. Isogeometric Kirchhoff-Love shell formulation for elasto-plasticity. *Computer Methods in Applied Mechanics and Engineering* 2018; Volum 340.s.320-339. NTNU

Antuono, Matteo; Lugni, Claudio. Global force and moment in rectangular tanks through a modal method for wave sloshing. *Journal of Fluids and Structures* 2018; Volum 77. s.1-18. NTNU

Bachynski, Erin Elizabeth; Pakozdi, Csaba; Östman, Anders Lennart; Stansberg, Carl Trygve. Computational Fluid Dynamics Reproduction of Nonlinear Loads on a Vertical Column during Extreme Irregular Wave Events. *Journal of Offshore Mechanics and Arctic Engineering* 2018; Volum 140.(6). OCEAN NTNU

Berget, Gunhild Elisabeth; Fossum, Trygve Olav; Johansen, Tor Arne; Eidsvik, Jo; Rajan, Kanna. Adaptive Sampling of Ocean Processes Using an AUV with a Gaussian Proxy Model. *IFAC-PapersOnLine* 2018; Volum 51.(29) s.238-243. NTNU

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Brodtkorb, Astrid H.; Nielsen, Ulrik Dam; Sørensen, Asgeir Johan. Online wave estimation using vessel motion measurements. *IFAC-PapersOnLine* 2018; Volum 51.(29) s.244-249. NTNU

Brodtkorb, Astrid H.; Nielsen, Ulrik Dam; Sørensen, Asgeir Johan. Sea state estimation using vessel response in dynamic positioning. *Applied Ocean Research* 2018; Volum 70. s.76-86. NTNU

Brodtkorb, Astrid H.; Værnø, Svenn Are Tutturen; Teel, Andrew R.; Sørensen, Asgeir Johan; Skjetne, Roger. Hybrid controller concept for dynamic positioning of marine vessels with experimental results. *Automatica* 2018; Volum 93. s.489-497. NTNU

Bruserud, Kjersti; Haver, Sverre. Current conditions in the northern North Sea. *Ocean Engineering* 2018; Volum 156. s.318-332. NTNU UIS

Bruserud, Kjersti; Haver, Sverre; Myrhaug, Dag. Joint description of waves and currents applied in a simplified load case. *Marine Structures* 2018; Volum 58. s.416-433. NTNU UIS

Bruserud, Kjersti; Haver, Sverre; Myrhaug, Dag. Simulated wind-generated inertial oscillations compared to current measurements in the northern North Sea. *Ocean Dynamics* 2018; Volum 68.(6) s.645-661. NTNU UIS

Buadu, Stephanie; Schjølberg, Ingrid; Mo-Bjørkelund, Tore. Mission planner for multiple AUVs: Verification procedures combining simulations and experiment. *Proceedings of the Symposium on Autonomous Underwater Vehicle Technology* 2018. NTNU

Bucelli, Marta; Landucci, Gabriele; Haugen, Stein; Paltrinieri, Nicola; Cozzani, Valerio. Assessment of safety barriers for the prevention of cascading events in oil and gas offshore installations operating in harsh environment. *Ocean Engineering* 2018; Volum 158. s.171-185. NTNU

Bøckmann, Eirik; Yrke, Audun; Steen, Sverre. Fuel savings for a general cargo ship employing retractable bow foils. *Applied Ocean Research* 2018; Volum 76. s.1-10. NTNU

Chabaud, Valentin Bruno; Eliassen, Lene; Thys, Maxime; Sauder, Thomas Michel. Multiple-degree-of-freedom actuation of rotor loads in model testing of floating wind turbines using cable-driven parallel robots. *Journal of Physics: Conference Series* 2018; Volum 1104. OCEAN NTNU

Chai, Wei; Leira, Bernt Johan. Environmental contours based on inverse SORM. *Marine Structures* 2018; Volum 60. s.34-51. NTNU

Chai, Wei; Leira, Bernt Johan; Næss, Arvid. Probabilistic methods for estimation of the extreme value statistics of ship ice loads. *Cold Regions Science and Technology* 2018; Volum 146. s.87-97. NTNU

Chai, Wei; Leira, Bernt Johan; Næss, Arvid. Short-term extreme ice loads prediction and fatigue damage evaluation for an icebreaker. *Ships and Offshore Structures* 2018; Volum 13. Suppl.1. s.127-137. NTNU

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Cheng, Yong; Ji, Chunyan; Zhai, Gangjun; Gaidai, Oleg. Nonlinear analysis for ship-generated waves interaction with mooring line/riser systems. *Marine Structures* 2018; Volum 59. s.1-24. NTNU

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Cheng, Yong; Ji, Chunyan; Zhai, Gangjun; Gaidai, Oleg. Oblique Wave-Induced Responses of A VLFS Edged with A Pair of Inclined Perforated Plates. *China Ocean engineering* 2018; Volum 32.(1) s.14-25. NTNU

Cheng, Yong; Li, Gen; Ji, Chunyan; Zhai, Gangjun; Gaidai, Oleg. Current effects on nonlinear wave slamming by an Oscillating Wave Surge Converter. *Engineering analysis with boundary elements* 2018; Volum 96. s.150-168. NTNU

Cheng, Zhengshun; Gao, Zhen; Moan, Torgeir. Hydrodynamic load modeling and analysis of a floating bridge in homogeneous wave conditions. *Marine Structures* 2018; Volum 59. s.122-141. NTNU

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Cheng, Zhengshun; Wang, Kai; Ong, Muk Chen. Assessment of performance enhancement of a semi-submersible vertical axis wind turbine with an optimized Darrieus rotor. *Engineering structures* 2018; Volum 167. s.227-240. NTNU UIS

Cho, Seongpil; Gao, Zhen; Moan, Torgeir. Model-based Fault Detection, Fault Isolation and Fault-tolerant Control of a Blade Pitch System in Floating Wind Turbines. *Renewable Energy* 2018; Volum 120. s.306-321. NTNU

Choi, Minjoo; Erikstad, Stein Ove; Chung, Hyun. Operation platform design for modular adaptable ships: Towards the configure-to-order strategy. *Ocean Engineering* 2018; Volum 163. s.85-93. NTNU SINTEF

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Fossum, Trygve Olav; Eidsvik, Jo; Ellingsen, Ingrid H.; Alver, Morten; Fragoso, Glaucia Moreira; Johnsen, Geir; Mendes, Renato; Ludvigsen, Martin; Rajan, Kanna. Information-driven robotic sampling in the coastal ocean. *Journal of Field Robotics* 2018; Volum 35.(7) s.1101-1121. OCEAN NTNU UNIS

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Fucile, Fabio; Bulian, Gabriele; Lugni, Claudio. A probabilistic approach for the quantification of prediction error in deterministic phase-resolved wave forecasting. *Ocean Engineering* 2018; Volum 163. s.718-736. NTNU

Gavrilin, Sergey; Steen, Sverre. Global sensitivity analysis and repeated identification of a modular maneuvering model of a passenger ferry. *Applied Ocean Research* 2018; Volum 74. s.1-10. NTNU

Ghane, Mahdi; Gao, Zhen; Blanke, Mogens; Moan, Torgeir. On the Joint Distribution of Excursion Duration and Amplitude of a Narrow-Band Gaussian Process. *IEEE Access* 2018; Volum 6. s.15236-15248. NTNU

Ghane, Mahdi; Nejad, Amir Rasekhi; Blanke, Mogens; Gao, Zhen; Moan, Torgeir. Condition monitoring of spartype floating wind turbine drivetrain using statistical fault diagnosis. *Wind Energy* 2018; Volum 21.(7) s.575-589. NTNU

Giske, Finn-Idar Grøtta; Kvåle, Knut Andreas; Leira, Bernt Johan; Øiseth, Ole. Long-term extreme response analysis of a long-span pontoon bridge. *Marine Structures* 2018; Volum 58. s.154-171. NTNU

Grefstad, Ørjan; Schjølberg, Ingrid. Navigation and collision avoidance of underwater vehicles using sonar data. *Proceedings of the Symposium on Autonomous Underwater Vehicle Technology* 2018. NTNU

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Guo, Xiaoxian; Yang, Jianmin; Gao, Zhen; Moan, Torgeir; Lu, Haining. The Surface Wave Effects on the Performance and the Loading of a Tidal Turbine. *Ocean Engineering* 2018; Volum 156. s.120-134. NTNU

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He, Zhao; Faltinsen, Odd Magnus; Fredheim, Arne; Kristiansen, Trygve. The influence of fish on the mooring loads of a floating net cage. *Journal of Fluids and Structures* 2018; Volum 76. s.384-395. OCEAN NTNU

Hegde, Jeevith; Utne, Ingrid Bouwer; Schjølberg, Ingrid; Thorkildsen, Brede. A Bayesian approach to risk modeling of autonomous subsea intervention operations. *Reliability Engineering & System Safety* 2018; Volum 175. s.142-159. NTNU

Heyn, Hans-Martin; Skjetne, Roger. Time-frequency analysis of acceleration data from ship-ice interaction events. *Cold Regions Science and Technology* 2018; Volum 156. s.61-74. NTNU

Holen, Siri Mariane; Utne, Ingrid Bouwer; Holmen, Ingunn Marie; Aasjord, Halvard Laurits. Occupational safety in aquaculture – Part 1: Injuries in Norway. *Marine Policy* 2018; Volum 96. s.184-192. OCEAN NTNU

Holen, Siri Mariane; Utne, Ingrid Bouwer; Holmen, Ingunn Marie; Aasjord, Halvard Laurits. Occupational safety in aquaculture – Part 2: Fatalities in Norway 1982–2015. *Marine Policy* 2018; Volum 96. s.193-199. OCEAN NTNU

Holmen, Ingunn Marie; Utne, Ingrid Bouwer; Haugen, Stein. Risk assessments in the Norwegian aquaculture industry: Status and improved practice. *Aquacultural Engineering* 2018; Volum 83. s.65-75. OCEAN NTNU

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Horn, Jan-Tore H.; Winterstein, Steven R. Extreme response estimation of offshore wind turbines with an extended contour-line method. *Journal of Physics: Conference Series* 2018; Volum 1104. NTNU

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[Advances in semi-empirical time domain modelling of vortex-induced vibrations](), Ulveseter, Jan Vidar (Doctoral theses at NTNU;2018:135, Doctoral thesis, 2018)

[Autonomous underwater vehicles in Arctic marine operations: Arctic marine research and ice monitoring](), Norgren, Petter (Doctoral theses at NTNU;2018:255, Doctoral thesis, 2018)

[Guidance and Control of Marine Robotics for Ocean Mapping and Monitoring](), Nornes, Stein M. (Doctoral theses at NTNU;2018:202, Doctoral thesis, 2018)

[Tools and methods to manage risk in autonomous subsea inspection, maintenance and repair operations](), Hegde, Jeevith (Doctoral theses at NTNU;2018:71, Doctoral thesis, 2018)

Master's degrees in 2018

Read the Master theses for 2018 [here]().

Candidate:		Title:
Aarsnes	Marion	A Feasibility Study of Assessing Bunkering Operations Through AIS Data
Aas-Hansen	Trine	Evaluation of Seakeeping Capabilities of a Floating Solar Plant
Agdestein	Einar Nonås	Visual Estimation of Motion for ROVs - Increasing Accuracy for ROV Navigation
Alvern	Ole Schanche	Marine Hybrid Propulsion Systems - Overview, Feasibility, and a Case Study of a High-Speed Passenger Vessel
Andersen	Ingrid Rolland	Tidal and Wind Driven Boundary Layer Flow in Coastal Zones
Arumugam Elumalai	Venkatesan	Fabrication, Launching and Towing of Submerged Production Unit - A Technology Development Project of Subsea7

Attanapola	Dhanushi Nayanatara	Numerical Simulation of Viscous Shear Flow Around Tandem Cylinders
Axelsen	Jørgen Jensen	A Study of the Operational Patterns of LNG Carriers from AIS Data
Bertelsen	Øystein Ølund	Analysis and Design of Mooring and Turret Systems for Ship-shaped Floating Production Systems (FPSOs)
Birkeland	Frid Grøtterud	The Motion of Slender, Cylindrical Bodies - An Experimental and Theoretical Investigation
Borgnes	Mathias	Probabilistic Methods for Estimation of Extreme Ice Loads on Ships
Bredahl	Jens Kristian Myhrer	Experimental Study of High-Pressure Gas Injection Using Optical Methods
Bremer	Kaja Steffensen	Using Neural Networks to Predict the Response of a Floating Structure
Buadu	Stephanie	Advanced Mission Planner for Cooperative Underwater Vehicles
Burås	Magne	Hybrid fuel-cell auxiliary system for an aquaculture vessel
Bøe	Terje Skogan	Analysis and Design of Stiffened Columns in Offshore Floating Platforms Subjected to Supply Vessel Impacts
Chen	Kai Jia Jin	Modeling and control of a SES in various operational modes
Chiu	Tsz Kit	Sonar tracking and obstacle avoidance for navigation of ROV
Dagestad	Ingvild	Actuation moments for hydrofoil flaps
Dou	Rui	Numerical Modeling and Analysis of a Semi-submersible Fish-cage
Drønen	Simon	Feasibility of an all-electric Fishing Vessel based on AIS data
Eidal	Maren Kristine	COLREGS Compatible Motion Planning for Autonomous Surface Vessels
Ekanger	August	Developing an Autonomous Tracking System for the Atlantic Salmon
Ellingsen	Sondre Lydvo	Pipeline damage assessment after trawling impact
Eriksson	Sebastian Erik	2D experimental and numerical study of moonpool with recess
Farnes	Sigurd	Data-driven fault detection for plunger pumps
Fimland	Dennis Hallås	Nonlinear Wave Loads on a Vertical Cylinder
Fjelldal	Torgeir	Autonomous Systems Design - An Exploratory Research Study in the Context of Maritime Shipping
Fjellvang	Snorre Ludvig	Adaptive Vertical Motion Control System for a Surface Effect Ship
Flatøy	Erlend	Analysis of an Offshore Jacket subjected to Supply Vessel Impacts
Fløgum	Benedicte Elise	A Concept Study of a Pre-tensioned S-shaped Pontoon Bridge with Submerged Floating Twin-Tubes
Fossdal	Markus	Online Consequence Analysis of Situational Awareness for Autonomous Vehicles
Førrisdal	Even Wollebæk	Empirical Prediction of Residuary Resistance of Fast Catamarans
Gohin	Gaspar Felix Gilles	Upscaling, analysis, and design of a floating vertical axis wind turbine
Grefstad	Ørjan	Development of an Obstacle Detection and Avoidance System for ROV
Grønnæss	Kristin	Performance monitoring on a gas admission valve in a dual fuel engine - Implementation of condition based maintenance by applying machine learning and statistical models
Gupta	Prateek	Experimental Investigation of Porous Structures in Splash Zone
Gustavsen	Herman Øen	Proposal and comparison of an eXogenous Kalman Filter and a Particle Filter for use with ROV thruster models
Hagen	Benjamin Vist	Influence of a Wavefoil on the Wave Pattern Resistance of a Ship
Hagen	Stian Arneborg	Damage Assessment of Sevan 1000 FPSO Subjected to Impacts from Shuttle Tankers
Halvorsen	Lars Gellein	Investigation of the effect of sloshing in a floating closed fish farm
Harr	Mathias	Numerical simulation of viscous flow around a step cylinder
Hatlevik	Anita Solhaug	Resistance analysis of trimaran service vessel using CFD

Hellvik	Elise	Description and Structural Analysis of a Marine Bridge for the Digernessund crossing
Helvik	Amund Døssland	Underwater parachute, an alternative installation method
Hoel	Preben Jensen	Digital Twin of Vessels in Arctic Environments - Extending a Simulation Environment to allow for External Control of Multiple Vessels
Hole	Kjetil Blindheim	Design of Mooring Systems for Large Floating Wind Turbines in Shallow Water
Holven	Erik Bjørklund	Control system for ROV Minerva 2
Hovden	Petter	Optimisation of a New Energy System in Longyearbyen based on LNG and Solar Energy - Applying Mixed Integer Linear Programming and a Rolling Horizon Heuristic
Hveding	Erik Axelsson	Hydrodynamic Analysis and Optimization of Interceptor based Air Lubrication for High Speed Vessels
Høie	Emil Benthien	Maximum Covering Location Approach for Solving a Coast Guard Deployment Problem
Håland	Helene Salte	Accidental Drop of Slender Cylindrical Bodies - A Numerical and Experimental Study of Velocity and Trajectory of Cylinders Falling Through Water
Ildstad	Jens Berg	Use of Turbulence Stimulation on Ship Models
Johansen	Sigrid Siksjø	On Developing a Digital Twin for Fault Detection in Drivetrains of Offshore Wind Turbines
Johansen	Stian Rørvik	Ship hulls exposed to ice-induced loads and resistance
Khan	Abir	Deep Reinforcement Learning based tracking behavior for underwater vehicles
Killi	Marius Lien	Hydrodynamic Interaction Among the Pontoons of a Floating Bridge: Effect of Global Responses
Kjærnli	Eirik Fagtun	Deep Reinforcement Learning Based Controllers In Underwater Robotics
Knudsen	Peter Nicolai	Exploring the Possibility of Electric and Autonomous Container Feeders
Kolltveit	Eivind Liby	Cooperative towing using USVs
Kolstø	Andreas Bro	Fault Detection for Position Mooring Using Statistical Analysis
Lande	Simen Vike	Path Planning for Marine Vehicles using Bézier curves
Larssen	Henrik Stumberg	Turbulence Modelling of the Flow Around a Prolate Spheorid
Lawrence	Christopher	Higher Order Spectral method for wave scenarios with nonlinear and dispersive effects
Leira	Benedikte	LNG as fuel on fishing vessels - Assessment of economic feasibility and environmental impact
Liang	Guodong	Frequency-domain Method for Global Dynamic Response Analysis of a Semi-submersible Floating Wind Turbine
Liland	Vegard Arnetveit	Feasibility Study of the ECO Trawl Concept
Lu	Ying	Current Profile Estimation for a Moored Floating Structure
Lund	Øyvind Haug	Evaluation and Comparison of Operability and Operational Limits of Service Vessel Designs in Exposed Aquaculture
Lunde	Karoline	Major Accidents in Exposed Fish Farming - A quantitative collision risk analysis
Lønnum	Ole Johan Jørgensen	Deep Learning Metocean Simulation and its Applications in Marine Simulation-based Design
Mao	Haiying	Riser lift system for deep sea mining
Mehn-Andersen	Ingrid	Time-domain Roll Motion Analysis of a Barge for Transportation of an Offshore Jacket Structure
Midtbust	Sondre Stang	Concept Study and Analysis of a Constant Buoyancy System for a Floating Single Column Platform

Midtgarden	Olav	Material Parameter Identification Using Artificial Neural Networks and Genetic Algorithm
Mohr	Julie Rabben	Using Field Data and Parametric Studies to Create a Dynamic Model of a Seismic Spread
Nerem	Trine	Assessment of Marine Fuels in a Fuel Cell on a Cruise Vessel
Nilsen	Tord Hauge	Analysis of the kelp farming industry in Norway with regard to conceptual design of vessles for harvesting and deployment operations
Nordkvist	Haakon Akse	An Advanced Method for Detecting Exceptional Vessel Encounters in Open Waters from High Resolution AIS Data
Næss	Patrick Andre	Investigation of Multivariate Freight Rate Prediction Using Machine Learning and AIS Data
Ortega Nadal	Alvaro	Time domain simulation parameters for fatigue assessment of an offshore gravity based wind turbine
Orvedal	Simen Haugen	Frequency Dependence of Bilge Keels
Osvoll	Ida Fagerli	Analysis and Design of Bjørnefjorden Floating Cable-Stayed Bridge subjected to Large Ship Collisions and Extreme Environmental Loads
Park	Daeseong	Onboard DC Power Systems for Hybrid Electric Ships: Simulation and Control
Patel	Pratim Jayesh	Validation of Nonlinear Hydrodynamic Load Models for a Monopile in Long-Crested Waves
Pocheau Lesteven	Malo Ange Baptiste	Hydrodynamic Analysis of Paddle Wheel Propulsion
Radhakrishnan	Gowtham	Analysis of accidental iceberg impacts with large passenger vessels and FPSOs
Rangel Valdes	Jorge Luis	Dynamic response analysis of a catamaran wind turbine installation vessel with focus on the transportation stage
Rimstad	Helene	Dynamic Modelling, Vibration and Fatigue Analysis of Slow Rotating Propulsion Systems
Rognaldsen	Anette	Numerical Investigation of Viscous Flow Around Two Tandem Circular Cylinders Ending on a Flat Plate
Rolandsen	Andre Nilsson	Digital Twin of Vessels in Arctic Environments
Rolland	Louise Ankerstjerne	Fluid Structure Interaction Analysis of Abnormal Wave Slamming Events
Saletti	Massimiliano	Comparative numerical and experimental study of the global responses of the spar-torus-combination in extreme waves due to the bottom slamming effect
Salvesen	Harald Bendik Ulvestad	Evaluation of Autonomous Container Feeder Fleets in Different Contexts and Needs
Sandal	Tarjei Nærø	Dynamic Analysis of Connected Jackets
Scheide	Margrete Sandsbråten	Using Deep Learning for Automatic Classification of Marine Habitats in HiSAS Imagery
Schønfeldt-Borchgrevink	Sofie	Isogeometric analysis with trimmed geometries applied to ship hulls
Scibona	Ignacio	Modelization and Analysis of Offshore Wind Support Vessels in the Scenario of the new Generation of Offshore Wind Farms
Senderud	Kristine	Modelling and Analysis of Floating Bridge Concepts Exposed to Environmental Loads and Ship Collision
Sjøberg	Trym Sogge	Evaluation and Comparison of Operability and Operational Limits of Service Vessel Designs in Exposed Aquaculture
Sjøholt	Natalie Bakke	Reliability Centered Maintenance (RCM) of the Autonomous Passenger Ferry in Trondheim
Skjulstad	Christoffer	Numerical Simulation of Viscous Flow Past A Curved Cylinder
Stemsrud	Synnøve Risting	Site surveys at Norwegian aquaculture sites - Methodologies for wave estimation

Stenlund	Tiril	Mooring System Design for a Large Floating Wind Turbine in Shallow Water
Thunes	Mats	Discrete-Event Simulation of Vessel Response Time for Acute Pollution in Aquaculture
Tofteng	Kim Andre	Efficient Installation of Subsea Equipment in Deep Water
Vigsnes	Joakim Tveiten	Seakeeping Analysis Comparison Between Viscous And Inviscid CFD
Vika	Eirik Breisnes	Modelling and Analysis of a Floating Bridge
Vikenes	Ole Kristian	Assessment of Necessary Air Gap of Semi-Submersible Accounting for Simultaneous Occurrence of Wind, Wind Sea and Swell Sea
Vågnes	David	Isogeometric Structural Analysis of Wind Turbine Blades
Wallentinsen	Asbjørn Sve	Sheltering Analysis of Gravity Based Structures in Shallow Water
Weiby	Anders Juul	Frequency-domain Roll Motion Analysis of a Transportation Barge Using Stochastic Linearization of Viscous Roll Damping
Winsvold	Jonathan	An Experimental Study on the Wave-Induced Hydroelastic Response of a Floating Solar Island
Xue	Libo	Computer Vision Based Autonomous Panel Intervention for a Remotely Operation Vessel
Zang	Yuyang	Experimental and Numerical Investigations of Global Motions and Slamming Loads on an Aquaculture Feed Barge
Øvregård	Siri Bjørkedal	Control Allocation for Underwater Snake Robots using Optimization Methods