



European Safety, Reliability and Data Association

Nantes, France
April 25th – 26th, 2018



UNIVERSITÉ DE NANTES

54th ESReDA Seminar on
**Risk, Reliability and Safety of Energy Systems
In Coastal and Marine Environments**



ISabella - G.Mannaerts



Nantes 2018



Carnegie Wave Energy Limited

Preliminary Programme

Day 0 – April 24th 2018: meeting of ESReDA Board of Directors

Day 1 – April 25th 2018

Day 2 – April 26th 2018

08h45-09h15	Welcome and registration
09h15-10h30	Keynote 1
10h30-10h50	Coffee break
10h50-12h30	Session 1
12h30-14h00	Lunch
14h00-15h40	Session 2 part a
15h40-16h00	Coffee break
16h00-17h15	Session 2 part b
17h17-17h40	Keynote 2
17h40-18h10	ESReDA General Assembly
19h00	Seminar Dinner

08h30-09h00	Welcome and registration
09h00-09h30	Keynote 3
09h30-10h45	Session 3 part a
10h45-11h00	Coffee break
11h00-13h05	Session 3 part b
13h05-14h30	Lunch
14h30-15h45	Session 4 part a
15h45-16h00	Coffee break
16h00-17h40	Session 4 part b
17h40-18h00	Closure

Day 3 – Visit of Scientific Equipments for Marine Renewable Energy: 9h00-12h00

Registration: F. Schoefs (Before April 10th 2018 – 6 pm)

A conference organized by



with the support of



and



Scope of the seminar

Nowadays, sustainable energy production becomes a very challenging issue and most of the economically developed and underdeveloped countries plan rapid evolution in the 15 coming years. The climate changes can be already felt in most of them. Meanwhile, when the UNESCO revealed that 16% of the population lived by the seaside (less than 100km from the coast) in 1990, this percentage reached 50% in 2010 and is planned to jump to 75% in 2035. Energy production from the sea or from the littoral is herein not only an opportunity with the ocean covering approximately 71% of the Earth surface, but also a chance with only few installed industrial systems in comparison with the potential and the existing scientific and technological knowledge (environmental resources, controlled energy systems, grid optimization and materials in sea environment).

Since the early 2010's, the European Community promotes researches and innovations in the field of Marine Renewable Energy, with the improvement of existing wind offshore industry based on fixed structures, the promising development of floating wind energy with increasing turbine capacities, the related increase of blade length and of the total height of the structure and the potential offered by ocean energy (wave, tidal, thermal). Recently, in 2016, the European Strategic Energy Technology Plan (SET-plan) wrote in its roadmap that the key goal is to reduce the LCOE (Levelized Cost Of Electricity) and set the target of 7 ct€/kWh to be reached by 2035. To reach this ambitious target, the European Platform of Universities in Energy Research & Education (EUA-EPUE) recommends to develop system reliability, maintenance and structural health monitoring optimization and to increase service lifetime from 25 years now to 35 years.

There are many technical issues and human challenges where risk, reliability and safety are involved: evaluation of uncertain resources (wind, wave, currents), material reliability, complex system reliability, electrical grid optimization, collision with ships, governance of risk in a multi-usage area (fishing, tourism, maritime transport, European defence).

The aim of the 54th ESReDA seminar is to bring together scientists, engineers and decision makers in the field of complex engineering system safety, structural health monitoring, cost/benefit assessment and risk management, in order to present and discuss innovative methodologies and practical applications related to complex system reliability, economical risk and human risk in complex environment. Scientific methodologies, theoretical issues and practical case studies are expected to cover all the range from academic to industrial applications, including electro-mechanical and civil engineering.

Topics include (but are not limited to):

- Reliability-based design and optimization (including structural, material and electro-mechanical issues);
- Service lifetime extension;
- Risks during sea operations and during service lifetime in a multi-usage area;
- Robustness quantification of complex systems;
- Electrical grid optimization and asset management;
- Life-cycle assessment and optimization;
- Structural and mechanical reliability, including electro-mechanical systems
- Probabilistic degradation models;
- Added value of structural health monitoring and Inspection, Maintenance and Repair optimization;
- Risk assessment and decision theory;
- Computation procedures in analysis and optimization;
- Failure consequences on human lives, activities and environmental damage ;
- Organisational and societal modelling;
- Industrial case studies in Coastal Structures and Marine Renewable Energy.

Day 1: April 25th 2018

08h45-09h15	Registration and welcome coffee
09h15-9h45	Welcome to participants from ESReDA, Université de Nantes and Chairman of the Conference
09h45-10h30	<p>Keynote lecture:</p> <p>“Risk, Reliability and Safety of Energy Systems in Coastal and Marine Environments”, JD. Sorensen (Aalborg University)</p>
10h30-10h50	Coffee Break
10h50-12h30	Session 1: Risk at sea: key issues, perception and evaluation
<i>1h40</i> <i>(20' each including questions)</i>	“From risk perception to risk estimation”, paper #54-19, by F-M Jégoux (Freelance Human Factors specialist, France).
	“Indicators for Energy Sea Routes”, paper #54-8, by J. Piedade, C. I. Fernandes (Instituto Português de Relações Internacionais, Portugal), Pedro Morais (Instituto Politécnico de Setúbal, Portugal).
	“Sociotechnical Evaluation of Anchorings and offshore FLOating Wind Energy Risks: a first study on in service resilience”, paper #54-28, by G. Proutière-Maulion, F. Schoefs, B. Tran (Université de Nantes, France).
	“Comparative energy scenarios: solving the capacity sizing problem on the French Atlantic Island of Yeu”, paper #54-10, by R. Loisel, L. Lemiale (Université de Nantes, France).
	“Improvement of the Energy Production Capability a Improvement of the Energy Production Capability by Using Electrical Conversion Technology Based on 2-star Generators”, paper #54-3, by C. Olmi, F. Sculler, J-F. Charpentier (Ecole Navale, France)
12h30-14h00	Lunch
14h00-15h30	Session 2a: Marine Renewable Energy Structure and Systems reliability
<i>1h30</i> <i>(20' each including questions)</i>	“Assessment of Reliability in a Sea of Risk”, paper #54-6, by P. Johannesson, T. Svensson (RISE, Sweden), E. Buck, A. Shanks (The European Marine Energy Centre, UK), C. Jia, Chong Ng (ORE Catapult, UK)
	“A Kriging based procedure for the certification of wind turbine structures: application to large scale models”, paper #54-23, by Q. Huchet (Université Clermont Auvergne/EDF R&D, France), C. Mattrand, P. Beaurepaire, N. Gayton (Université Clermont Auvergne, France), N. Relun (EDF R&D, France)
	“Reliability evaluation of an offshore platform using FMEA enhanced by TOPSIS”, paper #54-30, by I. Dagkinis, G. Leventakis, N. Nikitakos (University of Aegean, Greece).
	“Probabilistic model of an offshore monopile foundation taking into account the soil spatial variability”, paper #54-32, A. K. El Haj, A. H. Soubra, J. Fajoui, (University de Nantes, France), T. Al-Bittar (Lebanese University, Liban).
15h30-16h00	Coffee Break

16h00-17h10	Session 2b: Marine Renewable Energy Structure and Systems reliability
<i>1h10 (20' each including questions)</i>	<p>“Accounting for roughness of marine growth for probabilistic modelling of wave-structure interaction”, paper #54-29, by A. Bakhtiari, F. Schoefs (Université de Nantes; France), C. Berhault (Centrale Nantes, France), A. Ameryoun (Capacités, France).</p> <p>Reliability assessment of monopile structures subjected to bio-colonisation of marine growth”, paper # 54-14, T-B. Tran, F. Schoefs (Université de Nantes, France)</p> <p>“Statistical analysis of Mooring loading of a buoy through FOS and use in risk analysis”, paper #54-27, by F. Schoefs, C. Lupi (Université de Nantes, France), X. Chapeleau (IFSTTAR, France).</p>
17h10-17h40 <i>30 mn</i>	<p>Keynote lecture:</p> <p>“Presentation of MRE research in Pays de la Loire: West Atlantic Marine Energy Community”, P. Baclet (CEO of WEAMEC, France)</p>
17h50-19h30	ESReDA General Assembly
20h00	Seminar Dinner

Day 2: April 26th 2018

08h30-09h00	Welcome coffee
09h00-09h30	<p>Keynote lecture:</p> <p>“Next H2020 calls in MRE”, F. Kermagoret (Univ. Bretagne Loire)</p>
09h30-11h00	<p>Session 3: Reducing the Risks and Levelized Cost of Energy- Increase safety</p>
<i>1h30</i> <i>(20' each including questions)</i>	<p>“Calculation of the Unavailability’s an Offshore Wind Turbine Farm and a Tidal Turbine Farm”, paper #54-7, by L. Barthélemy (ENSM, France).</p>
	<p>“Risk Assessment for LNG and Oil terminals – Operator’s Expertise in Practice”, paper #54-31, by L. Mataitis (AB Klaipėdos nafta, Lithuania), F. Anusauskas (Coastal Research and Planning Institute, Lithuania), I. Žutautaitė (Lithuanian Energy Institute, Lithuania).</p>
	<p>“Optimizing terminal logistics by discrete event simulation”, paper #54-12, by S. Landsverk Isaksen (Safetec Nordic)</p>
	<p>“Optimisation of preventive maintenance of offshore wind turbine”, paper #54-33, by T-B Tran, F. Schoefs (Université de Nantes, France, Norway).</p>
11h00-11h20	Coffee Break
11h20-12h40	<p>Session 4: Stochastic degradation processes of marine structures</p>
<i>1h20</i> <i>(20' each including questions)</i>	<p>“A two-dimensional diffusion process as a degradation model”, paper #54-1, by M. Lefebvre (Polytec. Montréal, CA).</p>
	<p>“Probabilistic Assessment of Chloride Ingress Processes into Cracked Reinforced Concrete”, paper #54-16, by X-H Wang (Shanghai Maritime University, China), E. Bastidas-Arteaga (Université de Nantes, France)</p>
	<p>“A stochastic study of the hygro-elastic behavior of composite materials: application to the durability of renewable marine energy structures”, paper #54-18, by A. Clément, G. Bhati, S. Fréour, F. Jacquemin (Université de Nantes, France).</p>
	<p>“Time-variant fatigue up-dating of steel offshore wind turbines from SHM monitoring”, paper #54-25, B. Rocher (STX France Solutions, France), F. Schoefs, M. Chevreuil, L. Hawchar, M. François, C.P. El Soueidy (Université de Nantes, France)</p>
12h40-14h00	Lunch

14h00-15h10	Session 5a: Non Destructive Testing, Monitoring and Diagnosis of Marine Renewable Energy materials, structures and devices
<i>1h10</i> <i>(20' each including questions)</i>	“RiaSoR2: Reliability of Ocean Energy Devices supported by a Condition Monitoring Guidance”, paper #54-2, by J. Hüffmeier (RISE, Montréal, Sweden), O. Staven (Synective Labs, Sweden), M. Johanson (Alkit Communications, Sweden), O. El Mountassir (ORE Catapult, UK)
	“Modeling of a Multi-hazard degradation mechanism with a Lévy process based on ILI (In-Line) Inspections”, paper #54-11, by R. Amaya-Gómez (Université de Nantes, France/ Los Andes University, Colombia), M. Sánchez-Silva, F. Muñoz (Los Andes University, Colombia), E. Bastidas-Arteaga, F. Schoefs (Université de Nantes, France).
	“A semi-probabilistic approach for optimizing quantiles in the diagnoses of hydropower penstock pipes”, paper #54-15, by E. Ardillon (EDF-R&D, France), P. Bryla (EDF-DTG, France), A. Dumas (PHIMECA Engineering, France).
15h10-15h30	Coffee Break
15h30-17h00	Session 5b: Non Destructive Testing, Monitoring and Diagnosis of Marine Renewable Energy materials, structures and devices
<i>1h30</i> <i>(20' each including questions)</i>	“Risk Based Damage Simulation & Monitoring for Wind & Tidal Turbines”, paper#54-13, by J-C. De Luca, T. Moro, (IRT Jules Verne, France).
	“Non-destructive methods for measuring chloride ingress into concrete: challenges for the future”, paper #54-17, by M. Torres-Luque (CAPACITÉS, France), E. Bastidas-Arteaga, F. Schoefs (Université de Nantes, France), M. Sánchez-Silva (Universidad de los Andes, Colombia).
	“Hybrid inspection-monitoring approach for optimal maintenance planning”, paper #54-24, by C. Geara (Saint-Joseph University, Lebanon/Université Clermont Auvergne, France), R. Faddoul Saint-Joseph University, Lebanon), Alaa Chateaneuf (Université Clermont Auvergne, France), Wassim Raphaël (Saint-Joseph University, Lebanon).
	“Monitoring strategy of mooring systems submitted to marine growth: a first sensitivity analysis and Vol approach”, paper #54-26, B. Decurey*, F. Schoefs, P. Casari (Université de Nantes, France), H. Ameryoun (Capacités, France).
17h00-17h20	Conference Closure

Seminar Organization

The Seminar is jointly organised by ESReDA and Université de Nantes.

Chairman of the Seminar

Luís Andrade Ferreira (ESReDA President, University of Porto, Portugal)

Technical Programme Committee (TPC)

Franck Schoefs	(Université de Nantes, France), Chairman
Alaa Chateauneuf	(CIDECO, France), Co-chairman
Abdelkhalak El Hami	(INSA de Rouen, France)
Alan O'Connor	(Trinity College Dublin, Ireland)
André Lannoy	(IMdR, France)
Didier Lemosse	(INSA de Rouen, France)
Dimos Charmpis	(University of Cyprus, Cyprus)
Rodica Loisel	(Université de Nantes, France)
Fabrice Guérin	(Angers University, France)
Inga Žutautaitė	(Lithuanian Energy Institute, Lithuania)
Joan Ramon Casas	(Technical University of Catalonia, Barcelona, Spain)
John Andrews	(University of Nottingham, United Kingdom)
John Sørensen	(Technical University of Denmark, Denmark)
Mauricio Sanchez-Silva	(University Los Andes, Colombia)
Micaela Demichela	(Politecnico di Torino, Italy)
Milan Holicky	(Czech Technical University, Czech Republic)
Mohamed Eid	(CEA, France)
Mohammad Raza	(General Electric Power, Switzerland)
Radouane Laggoune	(Béjaia University, Algeria)

Local Organization and Scientific Committee (LOC)

Franck Schoefs	(Université de Nantes, France)
Mathilde Chevreuil	(Université de Nantes, France)
Valentine Rey	(Université de Nantes, France)
Emilio Bastidas-Arteaga	(Université de Nantes, France)
Charbel-Pierre El-Soueid	(Université de Nantes, France)
Abed Soubra	(Université de Nantes, France)
Philippe Baclet	(WEAMEC, France)
Sandrine Jamet	(WEAMEC, France)
Alaa Chateauneuf	(IDECO, France)

This seminar is organized in collaboration with IUML (Sea and Litoral Research Institute, Nantes, France), WEAMEC (West Atlantic Marine Energy Center), National Scientific Group MRGenCi and H2020 ERC Human Sea (Université de Nantes, France).

For practical local information relative to the venue, please, contact:

Prof. Franck Schoefs (franck.schoefs@univ-nantes.fr)

Subject of the e-mail: 54th ESReDA

RELEVANT DATES

ESReDA Board of Directors meeting:	April 24 th , 2018
Date of Seminar:	April 25 th – 26 th , 2018
ESReDA General Assembly:	April 25 th , 2018

Registration and Seminar Fee

Registration will be accepted until April 10th 2018. A registration form and information package for the venue can be downloaded from the ESReDA website.

The registration fees are 100 € for PhD students and 300 € for others. Fees are to be paid by bank transfer to ESReDA:

Holder: ESReDA
Bank: BNP Paribas Fortis Bank, Boulevard Jamar 1 D, 1060 Brussels, Belgium
IBAN: BE69 0012 3728 1678
BIC: GEBABEBB
Subject: Registration to the 54th ESReDA Seminar

Fee waiver:

- One speaker per accepted paper is free of seminar fees.
- Maximum 3 participants per ESReDA member organisation are exempted of fees.

About European Safety, Reliability & Data Association (ESReDA)

European Safety, Reliability & Data Association (ESReDA) is a European Association established in 1992 to promote research, application and training in Reliability, Availability, Maintainability and Safety (RAMS). ESReDA is an international non-profit association with approximately 35 member organizations comprising companies from different industries, research organizations and universities working within the safety and reliability field.

ESReDA aims to promote the development and the exchange of data, information and knowledge through the promotion of Project Groups (PG) on subjects related to Reliability, Safety and Data Analysis. In this PG's some of the best world specialists in these subjects are able to meet and, in a first time, to aggregate their knowledge and then to disseminate it for the sake of the scientific and technological communities in Europe and around the World. This dissemination can be made by organizing seminars twice per year and publishing the most important results of the Project Groups. Safety and Reliability Engineering is viewed as being an important component in the design of a system. However the discipline and its tools and methods are still evolving and expertise and knowledge dispersed throughout Europe. There is a need to pool the resources and knowledge within Europe and ESReDA provides the means to achieve this.

ESReDA membership is open to organisations, privates or governmental institutes, industry researchers and consultants, who are active in the field of Safety and Reliability. Membership fees are currently 1000€ for organisations and 500€ for universities and individual members. Special sponsoring or associate membership is also available.

For more information on ESReDA, contact: Inga.Zutautaitė@lei.lt

ESReDA General Secretary, Dr. Inga Žutautaitė (Lithuanian Energy Institute, Lithuania).

Venue & Accommodation

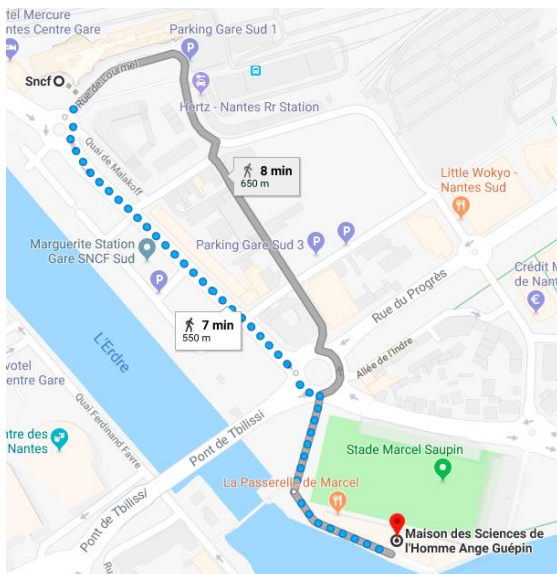
The seminar will be held on 25-26 April 2018 at the Maison des Sciences de l'Homme Ange-Guépin (House of Human Sciences) in the Nantes City Center (10-15 min walking distance from the historical centre and the castle and close to the old football stadium) close to river Loire, in the amphitheatre.

Address: 5 allée Jacques Berque
(5th road 'Jacques Berque')
BP 12105
44021 NANTES CEDEX 1

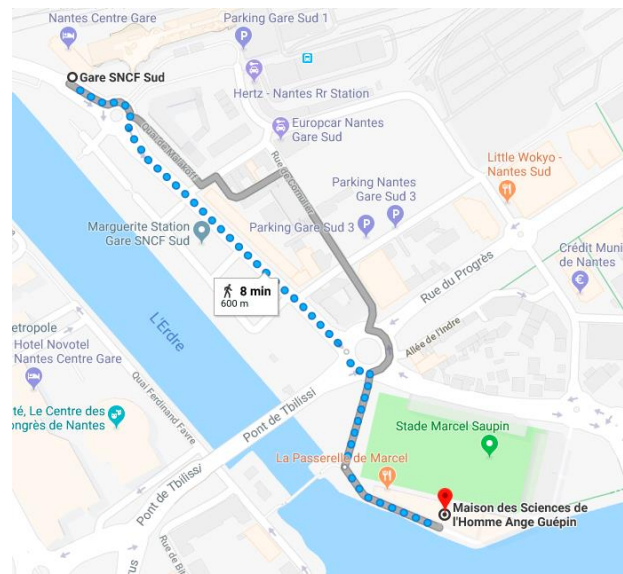


(entrance into the building is on the river side)

Access on foot from SNCF railway station (South exit 'sortie sud')



Access from the airport
Travel from/to the airport using the shuttle service (Navette Aéroport). Stop "Gare Sud":



Access by bus

Chronobus : Line C3 et C5 - Stop "Saupin-Crédit municipal"

Busway : Line 4- Stop "Cité des Congrès".

Tramway Line 1- Stop Gare SNCF. Go South Exit of railway station and follow map above.

Tramway Lines 2 et 3 - Stop "Aimé Delrue".

Hotels close to the Conference Location

- Seven Urban Suites**** Nantes Centre
- Hôtel Belfort Nantes
- Hôtel Novotel Nantes Centre Bord de Loire
- Hôtel ibis Nantes Centre Gare Sud
- Hotel Mercure Nantes Centre Gare
- Hôtel Saint Daniel