

9th International Conference on Airborne Wind Energy – AWEC2021

Social Program – Wednesday, 22 June 2022

Welcome cocktail and visit to Politecnico di Milano Wind Tunnel facility

Where: [Bovisa Campus, Building B19](#)

When: 16.30-19.00

Technical Program – Thursday, 23 June 2022

Where: [Leonardo Campus, Building 13 \(“Trifoglio”\), 2nd floor](#)

8.40-9.00	Conference opening - Room Colombo (T.2.1)		
	Donatella Sciuto, Executive Vice Rector of Politecnico di Milano Marcello Capra, Italian Ministry of the Ecological Transition (MITE)		
9.00-9.40	Plenary Session I - Room Colombo (T.2.1)		
9.00-9.20	Stephan Barth, International Energy Agency’s Wind Technology Collaboration Program (IEA Wind TCP)		
9.20-9.40	Paula Nardone, International Renewable Energy Agency (IRENA)		
9.45-11.00	Regular sessions		
	Modeling and Control I Room Vespucci (T.2.3)	Business Development Room Colombo (T.2.1)	Resource, siting, acceptance Room Polo (T.2.2)
9.45-10.00	<i>Kernel-based Identification of Periodically Parameter-Varying Models of Power Kites</i> Mingzhou Yin, ETH Zurich	<i>Airborne wind energy development database</i> Roland Schmehl, TU Delft	<i>Comparison of Two Data-driven Airborne Wind Energy Oriented Long-term Weather Forecast Methods</i> Zhixin Feng, TU Delft
10.00-10.15	<i>Safety-Critical Hybrid Control of Airborne Wind Energy Systems</i> Nikolaus Vertovec, University of Oxford	<i>Rapidly Deployable Airborne Wind Energy Systems for Defense and Disaster Response</i> Eric J. Lang, Univ. of Dayton Research Institute	<i>The Airborne Wind Energy Resource Analysis Tool AWERA</i> Lavinia Thimm, University of Bonn
10.15-10.30	<i>Estimation of Unknown Aerodynamic Forces of an AWE System</i> Ahmad Hably, Grenoble-INP	<i>Lessons Learned in Maturing Novel Renewables</i> Kester Gunn, RWE Renewables	<i>Towards flow-field characterization for AWES</i> Mark Kelly, DTU
10.30-10.45	<i>Iterative Learning-Based Kite Path Optimization for Maximum Energy Harvesting</i> James Reed, North Carolina State University	<i>Fostering International collaboration within IEA Wind TCP Task 48</i> Stefanie Thoms, Airborne Wind Europe	<i>Practicalities of Site Selection for an Offshore AWE Demonstration: A Case Study for Ireland</i> Inés Coca-Tagarro, BlueWise Marine
10.45-11.00	<i>Fault-tolerant Control of Airborne Wind Energy Systems with Quadrotor/Fixed-Wing UAV Configuration</i> Tareg Mohammed, Politecnico di Milano	<i>True 3D high density webbing inflatable structures</i> Rudo Enserink, enserinkdesign.com	<i>Social Acceptance of Airborne Wind Energy</i> Helena Schmidt, TU Delft
11.00-11.20	Coffee Break - main hall		

11.20-12.35		Regular sessions		
	Modeling and Control II Room Vespucci (T.2.3)	Company Developments Room Colombo (T.2.1)	Aerodynamics and Structure I Room Polo (T.2.2)	
11.20-11.35	<i>Kite Path-following with L_0 and L_1 Controllers Tested on a Small-scale Prototype</i> Sérgio Vinha, Universidade do Porto	<i>First Airborne Wind Energy operation on a tropical island</i> Joep Breuer, Kitepower BV	<i>Flying a rigid kite with a single tether attachment point</i> Tallak Tveide, KiteMill	
11.35-11.50	<i>Model Predictive Path-Following Control of Airborne Wind Energy Systems with Guaranteed Stability</i> Manuel C.R.M. Fernandes, Universidade do Porto	<i>Polar Wind Highways</i> Ignacio Oficialdegui, Windsled	<i>High fidelity Fluid-Structure Interaction Simulation of a Multi-megawatt Airborne Wind Energy Reference System</i> Niels Pynaert, Ghent University	
11.50-12.05	<i>Quantifying AWE Optimal Control Problem Tractability with Simple Vortex Models</i> Rachel Leuthold, University of Freiburg	<i>Rotary Kite Turbine Development</i> Roderick Read, Windswept and Interesting Ltd	<i>Improving Lifting-Line/Vortex-Step Methods for Kite Applications using 2D Unsteady Thin Airfoil Theory Results</i> Mac Gaunaa, DTU	
12.05-12.20	<i>ICM-autoKite Project: Control approaches for an automated kite propulsion</i> Franziska Hein, University of Stuttgart	<i>Technical Development in Kitemill</i> Espen Oland, Kitemill	<i>Combined Experimental and Numerical Aerodynamic Optimisation of High-Performance Rigid-Wing AWE Systems</i> Denes Fischer, Technical University Berlin	
12.20-12.35	<i>Automated Power Cycles in Daylong Operation at SkySails Test Site</i> Manfred Quack, SkySails Power GmbH	<i>Save Japan from a Future Social Crisis! 'Mothership' Project Current Development Progress</i> Eiji Itakura, Toyota Motor Corporation	<i>A Semi-Empirical Aerodynamic Model Based on Dynamic Stall for Rigid-Framed Delta Kites during Figure-of-Eight Maneuvers</i> Iván Castro-Fernández, Universidad Carlos III de Madrid	
12.35-12.45	Conference group photograph – Outside Building 13			
12.45-14.00	Lunch – Ground floor and outside			
13.15-14.00	European Academy of Wind Energy Technical Committee meeting – Room T.0.3			
13.15-14.00	Live video transmission - TU Delft student team: Kite Power on an Electric Pickup Truck, Design/Synthesis Exercise Symposium - Room Colombo (T.2.1)			
14.00-15.30	Plenary Session II - Room Colombo (T.2.1)			
14.00-14.30	Stephan Wrage, Skysails Power GmbH			
14.30-14.35	OEM presentations:			
14.30-14.35	<i>TwingTec's path to commercialization</i> Rolf Luchsinger, TwingTec AG			
14.35-14.40	<i>Kitekraft: Building Flying Wind Turbines</i> Florian Bauer, kiteKRAFT GmbH			
14.40-15.15	Panel Discussion I , moderated by Kristian Petrick, Airborne Wind Europe			
15.15-15.30	Poster Spotlights I			
15.30-16.00	Coffee Break - main hall			

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<p>15.40-16.40</p>	<p>Poster Session I and Coffee Break (main hall)</p>		
	<p><i>Magnus Effect Kites: Optimal Reel-Out Speeds for Cross-Wind Power Production and Early Simulation & Test Results</i> Garrett Smith, Wind Fisher SAS</p> <p><i>Modeling and Control of Airborne Wind Energy Systems using Prandtl lifting line and actuator line/curve models</i> Jean-Baptiste Crismer, Université catholique de Louvain</p> <p><i>Using the Lidar-validated hindcast model NORA3 for resource estimates of airborne wind energy systems</i> Jan Markus Diezel, University of Bergen</p> <p><i>Multi element airfoil design for an AWE rigid kite</i> Agustí Porta Ko, Kitemill and TU Delft</p> <p><i>Low and High Fidelity Aerodynamic Simulations for Airborne Wind Energy Box Wings</i> Gabriel Buendia, TU Delft</p>	<p><i>Modelling and Sizing of a Hybrid Power Plant using Airborne Wind Energy Systems</i> Sweder Reuchlin, TU Delft</p> <p><i>Fatigue Life Optimized Electromechanical Tether Design for Multimegawatt AWE</i> Stefan Neuhold, swiss inventix GmbH</p> <p><i>An Efficient Optimal Control Method for Airborne Wind Energy Systems with a Large Number of Slowly Changing Subcycles</i> Jakob Harzer, University of Freiburg</p> <p><i>Production Cycle Optimization for Pumping Airborne Wind Energy</i> Rodolfo Mathis, Politecnico di Milano</p>	<p><i>AirWing, a self-regulating control system for kites</i> Ingo Mewes, Hochschule für Schauspielkunst “Ernst Busch” Berlin</p> <p><i>Economic Potential of applying Circular Economy to AWE</i> Franco Vernazza, University of Buenos Aires</p> <p><i>Development of an Aeroelastic Simulation Framework for Leading Edge Inflatable Kites</i> John Watchorn, TU Delft</p> <p><i>Modelling aeroelastic deformation of inflatable membrane kites</i> Jelle Poland, TU Delft</p>
<p>16.45-18.00</p>	<p>Regular sessions</p>		
	<p>Performance and optimization Room Vespucci (T.2.3)</p> <p>16.45-17.00 <i>Power Smoothing in Utility-Scale Airborne Wind Energy Trajectory Optimization</i> Jochem De Schutter, University of Freiburg</p> <p>17.00-17.15 <i>Power Losses Analysis of AWESs via a Novel Quasi-Analytical Dynamic Model</i> Gregorio Pasquinelli, Politecnico di Milano</p> <p>17.15-17.30 <i>Multidisciplinary design and optimization of fixed-wing AWESs</i> Filippo Trevisi, Politecnico di Milano</p> <p>17.30-17.45 <i>Circular AWE Parks with High Ground Area Power Density</i> Moritz Diehl, University of Freiburg</p> <p>17.45-18.00 <i>Optimal reeling control for pumping airborne wind energy systems without wind speed feedback</i> Lorenzo Fagiano, Politecnico di Milano</p>	<p>Techno-economic studies Room Colombo (T.2.1)</p> <p>16.45-17.00 <i>NREL Airborne Wind Energy Workshop and Technical Report 2021</i> Jochem Weber, National Renewable Energy Laboratory</p> <p>17.00-17.15 <i>Airborne Wind Energy for Sea Water Desalination: A Techno-Economic Study</i> Mahdi E. Salari, University College Cork</p> <p>17.15-17.30 <i>Life-Cycle Analysis of an Airborne Wind Energy System</i> Kristian Petrick, Airborne Wind Europe</p> <p>17.30-17.45 <i>A reference economic model for airborne wind energy systems</i> Rishikesh Joshi, TU Delft</p> <p>17.45-18.00 <i>Energy Mix and Security Benefits of Airborne Wind Energy for Net Zero</i> Will Kennedy Scott, Swift Airgen Ltd.</p>	<p>Prototyping and operation Room Polo (T.2.2)</p> <p>16.45-17.00 <i>Status of UC3M Testbed for the Aerodynamic Characterization of Kites Applied to AWES</i> Francisco De Los Ríos-Navarrete, Universidad Carlos III de Madrid</p> <p>17.00-17.15 <i>Maximizing visibility of AWE systems for airspace users</i> Corey Houle, TwingTec AG</p> <p>17.15-17.30 <i>Rotational Launch and Landing: Flight tests at EnerKite</i> Christian Gebhardt, Enerkite GmbH</p> <p>17.30-17.45 <i>SkyPower100 - Realization of a fully automatic AWES (100 kW)</i> Patrick Junge, Skysails Power GmbH</p> <p>17.45-18.00 <i>Concepts for Obstruction Marking and Demand-Oriented Obstruction Avoidance to Ensure a Safe Operation of AWE Systems</i> Nicole Allgaier, Enerkite GmbH</p>

Social Program – Thursday, 23 June 2022

Conference banquet

Where: [Osteria del Treno, Via S. Gregorio, 46, 20124 Milano MI](#)

When: 19.00-22.00

Technical Program – Friday, 24 June 2022

Where: [Leonardo Campus, Building 13 \(“Trifoglio”\), 2nd floor](#)

8.35-9.40	Plenary Session III - Room Colombo (T.2.1)		
8.35-8.50	Kristian Petrick, Airborne Wind Europe, and Mike Blanch, BVG Associates		
8.55-9.40	Philip Bechtle, University of Bonn		
9.45-11.15	Regular sessions		
	Modeling and Control III Room Vespucci (T.2.3)	System Design Room Colombo (T.2.1)	Aerodynamics and Structure II Room Polo (T.2.2)
9.45-10.00	<i>Experimental Validation on Using Drones for the Take-off and Landing Phases of an AWE System</i> Zakeye Azaki, Grenoble-INP	<i>Rotation compensator based cyclic pitch control for Rotary Airborne Wind Energy Systems</i> Christof Beaupoil, someAWE Labs S.L.	<i>High-fidelity Tether Models for Airborne Wind Energy</i> Michael McWilliam, DTU
10.00-10.15	<i>Trajectory Tracking Controller Design and Simulation of a Tethered Aircraft</i> Anil Sami ÖNEN, Middle East Technical University	<i>Design Analysis of a Rotary Airborne Wind Energy System</i> Oliver Tulloch, University of Strathclyde	<i>Analytical wake models for crosswind kites</i> Mojtaba Kheiri, Concordia University
10.15-10.30	<i>C++ Based Systems Engineering Framework as a Key Approach Towards Efficient, Reliable, and Autonomous Flying Wind Turbine Products</i> Florian Bauer, kiteKRAFT GmbH	<i>Non-intrusive modeling of an AWE generator's bidirectional DC/DC converter</i> Joey Naranjo, Kitenergy Srl	<i>An Entrainment-Based Model for Annular Wakes, with Applications to Airborne Wind Energy</i> Sam Kaufman-Martin, University of California, Santa Barbara
10.30-10.45	<i>Julia Kite Power Tools</i> Uwe Fechner, Aenarete - Smart Wind	<i>Drivetrain concepts for pumping airborne wind energy systems</i> Rishikesh Joshi, TU Delft	<i>Aero-structural design tailoring of composite AWE wings</i> Ashwin Candade, Enerkite GmbH
10.45-11.00	<i>Some modelling and control aspects of rotational starting and landing</i> Maximilian Ranneberg, Enerkite GmbH	<i>The ICM-autoKite Project: Developing an automated kite propulsion system for the KITE GAS/FUEL SHIP and economic green hydrogen production</i> Klaus Heudorfer, University of Stuttgart	<i>The Daedalus project: AWE tether engineering method substantiated</i> Rigo Bosman, RIGO Ropes
11.00-11.15	<i>Optimal flight path for Fly-Gen Airborne Wind Energy Systems</i> Filippo Trevisi, Politecnico di Milano	<i>The Pyramid, a TRPT rethink</i> Oliver Tulloch, Windswept and Interesting Ltd	<i>Performance Investigation of Utility-Scale Airborne Wind Energy Farms using Large-Eddy Simulations</i> Thomas Haas, KU Leuven
11.15-11.40	Coffee Break - main hall		

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11.40-12.40	Plenary Session IV - Room Colombo (T.2.1)		
11.40-12.25	Chris Vermillion, North Carolina State University		
12.25-12.40	Poster Spotlights II		
12.40-14.00	Lunch – Ground floor and outside		
13.30-14.00	Airborne Wind Europe members’ meeting – Room T.0.3		
14.00-15.15	Poster Session II		
	<i>On control of phase transitions in Airborne Wind Energy Systems</i> Nicolas Kessler, Politecnico di Milano	<i>KGM1 – A different approach to the Airborne Wind Energy technology</i> Marco Ghivarello, GHIVA Prog. CAD	<i>Dynamics of tethered airborne wind energy systems</i> Mojtaba Kheiri, Concordia University
	<i>Predictive Control of a Morphing Airborne Wind Energy System</i> Jacob B. Fine, North Carolina State University	<i>Ground Station Control of an Airborne Wind Energy System in a Complete Operational Cycle</i> Ali Arshad Uppal, Universidade do Porto	<i>Open-source parametric FE meshing tool for fixed-wing AWE kites</i> Dylan Eijkelhof, TU Delft
	<i>Airborne Wind Energy Farm Layout and Optimization</i> Luís A.C. Roque, Universidade do Porto	<i>Swinging Motion of a Flexible Membrane Kite with Suspended Control Unit During Turning Maneuvers</i> Mark Schelbergen, TU Delft	<i>Achieving ultralight, rigid, durable, low-cost composite AWE kites with efficient design and manufacturing</i> Florian Breipohl, Enerkite GmbH
	<i>Annual Wind Resource Assessment for an Airborne Wind Energy System</i> Edgar Uriel Solís-Magallanes, Metropolitan Polytechnic University of Hidalgo	<i>Design of an Airborne Wind Energy System for Mars Habitats</i> Mario Rodriguez, TU Delft and DTU	<i>Fast Aeroelastic Model of a Leading-Edge Inflatable Kite</i> Uri Cayon, TU Delft and DTU
14.45-15.15	Coffee Break (main hall)		
15.15-16.00	Plenary Session V - Room Colombo (T.2.1)		
	OEM presentations:		
15.15-15.20	<i>Kitepower’s journey to the Islands and beyond</i> Johannes Peschel, Kitepower BV		
15.20-15.25	<i>Kitemill - commercial development</i> Thomas Hårklau, Kitemill AS		
15.25-15.30	<i>A Multidimensional Trade-off</i> Gian Mauro Maneia, Kitenergy Srl		
15.30-16.00	Panel Discussion II , moderated by Kristian Petrick, Airborne Wind Europe		
16.00-16.15	Farewell		

Registration package: A welcome desk to collect the registration package will be available in the following times:

- 16.30-18.00 on 22 June 2022 close to the Wind Tunnel Facility, [Bovisa Campus, Building B19](#)
- 8.30-16.00 on 23 June 2022 in the main hall, [Leonardo Campus, Building 13 \(“Trifoglio”\), 2nd floor](#)
- 8.30-14.00 on 24 June 2022 in the main hall, [Leonardo Campus, Building 13 \(“Trifoglio”\), 2nd floor](#)