

**The 14th International Conference on Quality, Reliability, Risk, Maintenance, and Safety  
Engineering (QR2MSE2024)**

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**Special Session on:**

**Reliability and Maintenance Planning for Renewable Energy Systems**

Renewable Energies such as wind, solar, and wave are emerging and taking market share from traditional energies, facilitated by the surge in demands for clean energy and environmental protection. Renewable energy systems in terms of production, transportation, and end utilization tend to be more complicated as a result of novel designs and new technological advancements such as sensing, material, and systems (or functions) integrity. Reliability and Maintenance is to find the most feasible, economical, and easy-to-follow solutions for lifelong management of such systems with the assistance of recently emerged techniques and decision-making tools.

However, practical reliability and maintenance methodologies for renewable energy systems are hard to construct when considering system complexity (correlated failures and functions), environment factors (wind, wave, etc.), limited maintenance resources (tools and personnel), and so forth. For instance, extreme operational temperature (day and night, summer and winter) reduces the reliability of generators, harsh sea conditions introduce additional unsafe factors to offshore energy facilities, vibrations weaken the resistance of electrical and tiny mechanical elements of renewable energy systems.

Reliability and maintenance methodologies become fundamental supports of renewable energy systems in terms of their safe and reliable operation, overall performance improvement, and lifelong cost saving, which can be an integrated decision-making problem considering, not limited to, structural analysis, environmental factors modeling, failure analysis and prevention, risk factors characterization, reliability issues, availability estimation, and maintenance resources management and planning/optimization.

To this end, this special issue is arranged for presenting original research dealing with newly emerged reliability and maintenance methodologies of renewable energy systems to provide academia with innovative ideas and industry with the most recent interesting applications.



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