applied sciences

MDPI

Editorial

Numerical Modeling in Energy and Environment

María Isabel Lamas Galdo

Escola Politécnica de Enxeñaría de Ferrol, Universidade da Coruña, C/Mendizábal s/n, 15403 Ferrol, Spain; isabel.lamas.galdo@udc.es

Nowadays, numerical methods constitute an important tool in the analysis of information that cannot be obtained experimentally, or that can be obtained only at a high cost or subject to significant disadvantages. The evolution that computation has undergone in recent years has made it possible to analyze cases that could not be possible some years ago.

Numerical models can be applied to a huge variety of fields, among which one particularly interesting application is in the area of energy and environment. In light of this, the Special Issue "Numerical Models in Energy and Environment" was proposed to collect contributions related to this topic such as two- and three-dimensional modeling in general, computational fluid dynamics, finite element analyses, mathematical models, advanced models, new application areas, etc. A total of 10 manuscripts were published in this Special Issue, with contributions from Spain, Italy, Canada, India, Poland, Portugal, Belgium, China, Germany, Ukraine and Czech Republic.

Several works were aimed at renewable energies, such as Damota et al. [1,2], who analyzed a vertical axis wind turbine Savonius type with CFD (computational fluid dynamics). Nguyen et al. [3] developed two models to improve the precision of estimating the operating temperature of outdoor photovoltaic modules. Shen et al. [4] conducted experimental tests and numerical calculations to analyze the hydraulic vibration and possible exciting sources of analysis in a hydropower system. Other papers were focused on thermal aspects, such as the work of Lebre et al. [5], who developed a computational modeling of the thermal behavior of a greenhouse, and Simon et al. [6], who focused on radiative transfer in complex environments. Other interesting contributions were those of Fomin et al. [7], who determined the vertical load on the carrying structure of a flat wagon with the 18–100 and Y25 bogies; Santos et al. [8], who evaluated the thermal performance and energy efficiency of CRAC equipment through mathematical modeling using a new index COP WEUED; Pandey et al. [9], who carried out CFD investigations of cyclone separators with different cone heights and shapes; and finally Badiozamani and Beier [10], who estimated the potential differential settlement of a tailing deposit based on consolidation properties heterogeneity.

Conflicts of Interest: The author declare no conflict of interest.

check for updates

Citation: Galdo, M.I.L. Numerical Modeling in Energy and Environment. *Appl. Sci.* **2023**, *13*, 24. https://doi.org/10.3390/app13010024

Received: 9 December 2022
Accepted: 14 December 2022
Published: 20 December 2022

References

1. Blanco Damota, J.; Rodríguez García, J.D.D.; Couce Casanova, A.; Telmo Miranda, J.; Caccia, C.G.; Galdo, M.I.L. Optimization of a Nature-Inspired Shape for a Vertical Axis Wind Turbine through a Numerical Model and an Artificial Neural Network. *Appl. Sci.* **2022**, *12*, 8037. [CrossRef]
2. Blanco, J.; Rodriguez, J.; Couce, A.; Lamas, M. Proposal of a Nature-Inspired Shape for a Vertical Axis Wind Turbine and Comparison of Its Performance with a Semicircular Blade Profile. *Appl. Sci.* **2021**, *11*, 6198. [CrossRef]
3. Nguyen, D.P.N.; Neyts, K.; Lauwaert, J. Proposed Models to Improve Predicting the Operating Temperature of Different Photovoltaic Module Technologies under Various Climatic Conditions. *Appl. Sci.* **2021**, *11*, 7064. [CrossRef]
4. Shen, A.; Chen, Y.; Zhou, J.; Yang, F.; Sun, H.; Cai, F. Hydraulic Vibration and Possible Exciting Sources Analysis in a Hydropower System. *Appl. Sci.* **2021**, *11*, 5529. [CrossRef]
5. Lebre, B.; Silva, P.D.; Pires, L.C.; Gaspar, P.D. Computational Modeling of the Thermal Behavior of a Greenhouse. *Appl. Sci.* **2021**, *11*, 11816. [CrossRef]
6. Simon, H.; Sinsel, T.; Bruse, M. Advances in Simulating Radiative Transfer in Complex Environments. *Appl. Sci.* **2021**, *11*, 5449. [CrossRef]
7. Fomin, O.; Lovska, A.; Píštěk, V.; Kučera, P. Determination of the Vertical Load on the Carrying Structure of a Flat Wagon with the 18–100 and Y25 Bogies. *Appl. Sci.* **2021**, *11*, 4130. [CrossRef]
8. Santos, A.; Gaspar, P.; de Souza, H. Evaluation of the Thermal Performance and Energy Efficiency of CRAC Equipment through Mathematical Modeling Using a New Index COP WEUED. *Appl. Sci.* **2021**, *11*, 5950. [CrossRef]
9. Pandey, S.; Saha, I.; Prakash, O.; Mukherjee, T.; Iqbal, J.; Roy, A.K.; Wasilewski, M.; Brar, L.B. CFD Investigations of Cyclone Separators with Different Cone Heights and Shapes. *Appl. Sci.* **2022**, *12*, 4904. [CrossRef]
10. Badiozamani, M.M.; Beier, N. Estimating the Potential Differential Settlement of a Tailings Deposit Based on Consolidation Properties Heterogeneity. *Appl. Sci.* **2022**, *12*, 6206. [CrossRef]