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Editorial

Special Issue: Feature Papers in *Eng* 2023

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1. Introduction

The aim of this third *Eng* Special Issue is to collect experimental and theoretical re-search relating to engineering science and technology. The topics included in *Eng* are as follows: electrical, electronic, and information engineering; chemical and materials engineering; energy engineering; mechanical and automotive engineering; industrial and manufacturing engineering; civil and structural engineering; aerospace engineering; biomedical engineering; geotechnical engineering and engineering geology; and ocean and environmental engineering. Many of these topics have been selected with the idea of contributing to the circular economy and sustainable development. Therefore, these aspects are being addressed from various points of view and have the support of the field of engineering and its applications. The following editorial presents a representative selection of these articles published in our journal in 2023.

Legislative requirements and the principles of the circular economy and sustainable development make waste valorization the best strategy for its management. The biodegradable fraction of industrial waste is a sustainable source of biomass, optimizing its management through energy recovery, reducing the amount of waste to be managed (and its economic costs), minimizing the environmental impact and health risks, and reducing the high dependence on industries on primary sources and fossil fuels [1–7]. Although traditional sources of biomass, such as wood, crops, agricultural and forestry residues, and food and municipal wastes, are renewable, sustainable, and profitable, they compete with food, and their energy processes release waste into the environment. On the other hand, there is also a non-biodegradable fraction of industrial waste. If its composition is taken into account, in many cases it is considered an inorganic waste. Here, its valorization is not as standardized as the biodegradable fraction, since the energy aspect is rarely taken into account, and it is the possible applications that give rise to the interest in valorizing this material, rather than depositing it in landfills [8].

Other topics discussed in this Special Issue are as follows:

- Amazon natural fibers for application in engineering composites and sustainable actions [9–12].
- Rheological behavior of modern cementitious materials [13–15].
- Vibration monitoring techniques for predictive maintenance of rotating machinery [16,17].
- Integrating multi-criteria decision-making methods with sustainable engineering [18,19].

These topics allow for greater discussion among potential readers. For more information, please see the Contributions.

2. Overview of the Published Articles

This Special Issue contains 34 papers, including eight reviews, published by several authors interested in cutting-edge developments in the field of engineering. The authors are from 25 countries, including Australia, Canada, Bosnia and Herzegovina, Brazil, Egypt, France, Germany, Greece, Hong Kong, Hungary, India, Italy, Japan, Mexico, Montenegro, Portugal, Russia, Serbia, Sweden, Taiwan, The Netherlands, United Arab Emirates, United Kingdom, USA, and Yemen.

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3. Conclusions

The articles published in this Special Issue present important advancements in the field of this journal. I would like to express my sincere gratitude to all the authors, who have contributed to this Special Issue, and I would also like to thank the managing editors and reviewers who contributed by improving the papers. I hope that the included articles are interesting and inspiring for readers, especially young scholars who are eager to learn about recent advances and contribute future research to the field.

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List of Contributions

1. Kara, P.; Ognjanovic, I.; Maindorfer, I.; Mantas, J.; Wippelhauser, A.; Šendelj, R.; Laković, L.; Roganović, M.; Reich, C.; Simon, A.; et al. The Present and Future of a Digital Montenegro: Analysis of C-ITS, Agriculture, and Healthcare. *Eng* **2023**, *4*, 341–366. https://doi.org/10.3390/eng4010021.
2. Junio, R.; da Silveira, P.; Neuba, L.; Monteiro, S.; Nascimento, L. Development and Applications of 3D Printing-Processed Auxetic Structures for High-Velocity Impact Protection: A Review. *Eng* **2023**, *4*, 903–940. https://doi.org/10.3390/eng4010054.
3. Elshaboury, N.; Mohammed Abdelkader, E.; Al-Sakkaf, A.; Zayed, T. A Critical Review and Bibliometric Analysis on Applications of Ground Penetrating Radar in Science Based on Web of Science Database. *Eng* **2023**, *4*, 984–1008. https://doi.org/10.3390/eng4010059.
4. Sharafeldin, M.; Ksaibati, K.; Gerow, K. Frequency Analysis of Equivalent Property-Damage-Only (EPDO) Crashes at Intersections. *Eng* **2023**, *4*, 1116–1126. https://doi.org/10.3390/eng4020064.
5. Hasan, A.; Hasan, U.; AlJassmi, H.; Whyte, A. Transit Behaviour and Sociodemographic Interrelation: Enhancing Urban Public-Transport Solutions. *Eng* **2023**, *4*, 1144–1155. https://doi.org/10.3390/eng4020066.
6. Comuzzi, L.; Tumedei, M.; Di Pietro, N.; Romasco, T.; Montesani, L.; Piattelli, A.; Covani, U. Are Implant Threads Important for Implant Stability? An In Vitro Study Using Low-Density Polyurethane Sheets. *Eng* **2023**, *4*, 1167–1178. https://doi.org/10.3390/eng4020068.
7. Pontarolli, R.; Bigheti, J.; de Sá, L.; Godoy, E. Microservice-Oriented Architecture for Industry 4.0. Eng **2023**, *4*, 1179–1197. https://doi.org/10.3390/eng4020069.
8. Johnson, J. Rapid Prediction of Leaf Water Content in Eucalypt Leaves Using a Handheld NIRS Instrument. *Eng* **2023**, *4*, 1198–1209. https://doi.org/10.3390/eng4020070.
9. Kakinuma, T.; Hisada, M. A Numerical Study on the Response of a Very Large Floating Airport to Airplane Movement. *Eng* **2023**, *4*, 1236–1264. https://doi.org/10.3390/eng4020073.
10. Flamarion, M.; Castro, E.; Ribeiro-Jr, R. Pressure Anomalies Beneath Solitary Waves with Constant Vorticity. *Eng* **2023**, *4*, 1306–1319. https://doi.org/10.3390/eng4020076.
11. Shyam Kumar, P.; Ramasamy, M.; Varadan, V. A Comparison of Personalized and Generalized LSTM Neural Networks for Deriving VCG from 12-Lead ECG. *Eng* **2023**, *4*, 1337–1355. https://doi.org/10.3390/eng4020078.
12. Shan, F.; He, X.; Xu, H.; Armaghani, D.; Sheng, D. Applications of Machine Learning in Mechanised Tunnel Construction: A Systematic Review. *Eng* **2023**, *4*, 1516–1535. https://doi.org/10.3390/eng4020087.
13. Štilić, A.; Puška, A. Integrating Multi-Criteria Decision-Making Methods with Sustainable Engineering: A Comprehensive Review of Current Practices. *Eng* **2023**, *4*, 1536–1549. https://doi.org/10.3390/eng4020088.
14. Nilimaa, J.; Zhaka, V. An Overview of Smart Materials and Technologies for Concrete Construction in Cold Weather. *Eng* **2023**, *4*, 1550–1580. https://doi.org/10.3390/eng4020089.
15. Rosta, S.; Gáspár, L. Skid Resistance of Asphalt Pavements. *Eng* **2023**, *4*, 1597–1615. https://doi.org/10.3390/eng4020091.
16. García-Pintos, C.; Aldana-Murillo, N.; Ovalle-Magallanes, E.; Martínez, E. A Deep Learning-Based Visual Map Generation for Mobile Robot Navigation. *Eng* **2023**, *4*, 1616–1634. https://doi.org/10.3390/eng4020092.

17. Lee, J.; Tayfur, H.; Hamza, M.; Alzahrani, Y.; Diaconeasa, M. A Limited-Scope Probabilistic Risk Assessment Study to Risk-Inform the Design of a Fuel Storage System for Spent Pebble-Filled Dry Casks. *Eng* **2023**, *4*, 1655–1683. https://doi.org/10.3390/eng4020094.
18. Fiorin, F.; Sartori, L.; Méndez, M.; Ferreira, C.; França, M.; Krueger, E. The Learning Curve of People with Complete Spinal Cord Injury Using a NESs-FESs Interface in the Sitting Position: Pilot Study. *Eng* **2023**, *4*, 1711–1722. https://doi.org/10.3390/eng4020097.
19. Romanssini, M.; de Aguirre, P.; Compassi-Severo, L.; Girardi, A. A Review on Vibration Monitoring Techniques for Predictive Maintenance of Rotating Machinery. *Eng* **2023**, *4*, 1797–1817. https://doi.org/10.3390/eng4030102.
20. El Bitouri, Y. Rheological Behavior of Cement Paste: A Phenomenological State of the Art. *Eng* **2023**, *4*, 1891–1904. https://doi.org/10.3390/eng4030107.
21. da Silva, F.; de Castro, P. Redesign of a Failed Hoisting Shaft of a Vertical Transfer Device. *Eng* **2023**, *4*, 1981–2002. https://doi.org/10.3390/eng4030112.
22. Hasan, U.; AlJassmi, H.; Hasan, A. Microsimulation Modelling and Scenario Analysis of a Congested Abu Dhabi Highway. *Eng* **2023**, *4*, 2003–2014. https://doi.org/10.3390/eng4030113.
23. Chliveros, G.; Kontomaris, S.; Letsios, A. Automatic Identification of Corrosion in Marine Vessels Using Decision-Tree Imaging Hierarchies. *Eng* **2023**, *4*, 2090–2099. https://doi.org/10.3390/eng4030118.
24. Sosnin, M.; Berestenko, E.; Mounassar, E.; Shorstkii, I. Cold Plasma Technology for Tomato Processing By-Product Valorization: The Case of Tomato Peeling and Peel Drying. *Eng* **2023**, *4*, 2167–2177. https://doi.org/10.3390/eng4030124.
25. Durden, S.; Vilnrotter, V.; Shaffer, S. Assessment of Techniques for Detection of Transient Radio-Frequency Interference (RFI) Signals: A Case Study of a Transient in Radar Test Data. *Eng* **2023**, *4*, 2191–2203. https://doi.org/10.3390/eng4030126.
26. Provatidis, C. Power Transmission Using Circular Elements Bounded by Given Central Angle in Rolling Contact. *Eng* **2023**, *4*, 2309–2335. https://doi.org/10.3390/eng4030132.
27. Oliveira, C.; Lima, T. Setup Time Reduction of an Automotive Parts Assembly Line Using Lean Tools and Quality Tools. *Eng* **2023**, *4*, 2352–2362. https://doi.org/10.3390/eng4030134.
28. Gonzalez, Y.; Prati, R. Comparative Study of Musical Timbral Variations: Crescendo and Vibrato Using FFT-Acoustic Descriptor. *Eng* **2023**, *4*, 2468–2482. https://doi.org/10.3390/eng4030140.
29. Schmitz, M.; Menz, F.; Grunau, R.; Mandischer, N.; Hüsing, M.; Corves, B. Robot Cooking—Transferring Observations into a Planning Language: An Automated Approach in the Field of Cooking. *Eng* **2023**, *4*, 2514–2524. https://doi.org/10.3390/eng4040143.
30. Franco, B.; Alves Ribeiro, J.; Sánchez-Arce, I. Development of an Airbag Geometry Specific for Autonomous Vehicles. *Eng* **2023**, *4*, 2553–2570. https://doi.org/10.3390/eng4040146.
31. Rodrigues, E.; Santos, D.; Buiochi, F. Comparison of Three Linear Digital Filters Applied to Improve the Quality of the Measured Acoustic Field. *Eng* **2023**, *4*, 2582–2600. https://doi.org/10.3390/eng4040148.
32. Koury Costa, G. Modelling Air Flow through Pneumatic Valves: A Brief Review with an Experimental Case Study. *Eng* **2023**, *4*, 2601–2614. https://doi.org/10.3390/eng4040149.
33. Patle, B.; Patel, B.; Jha, A.; Kashyap, S. Self-Directed Mobile Robot Navigation Based on Functional Firefly Algorithm (FFA). *Eng* **2023**, *4*, 2656–2681. https://doi.org/10.3390/eng4040152.
34. da Silveira, P.; Cardoso, B.; Marchi, B.; Monteiro, S. Amazon Natural Fibers for Application in Engineering Composites and Sustainable Actions: A Review. *Eng* **2024**, *5*, 133–179. https://doi.org/10.3390/eng5010009.

References

1. Castaldi, M.M.; van Deventer, J.; Lavoie, J.M.; Legrand, J.; Nzihou, A.; Pontikes, Y.; Py, X.; Vandecasteele, C.; Vasudevan, P.T.; Verstraete, W. Progress and Prospects in the Field of Biomass and Waste to Energy and Added-Value Materials. *Waste Biomass Valor.* **2017**, *8*, 1875–1884. [CrossRef]
2. Qazi, W.A.; Abushammala, M.F.M.; Azam, M.-H.; Younes, M.K. Waste-to Energy Technologies: A Literature Review. *J. Solid Waste Technol. Manag.* **2018**, *44*, 387–409. [CrossRef]
3. Bolis, V.; Capón-García, E.; Roca-Puigros, M.; Gazzola, A.; Hungerbühler, K. Opimal Design and Management of Industrial Waste-to-Energy Systems. *Ind. Eng. Chem. Res.* **2019**, *58*, 3735–3753. [CrossRef]
4. Seljak, V.; Buffi, M.; Valera-Medina, A.; Chong, C.T.; Chiaramonti, D.; Katrašnik, T. Bioliquids and their Use in Power Generation—A Technology Review. *Renew Sustain. Energy Rev.* **2020**, *129*, 109930. [CrossRef]

5. Bora, A.P.; Gupta, D.P.; Durbha, K.S. Sewage Sludge to Bio-Fuel: A Review on the Sustainable Approach of Transforming Sewage Waste to Alternative Fuel. *Fuel* **2020**, *259*, 116262. [CrossRef]
6. Gil, A. Current insights into Lignocellulose Related Waste Valorization. *Chem. Eng. J. Adv.* **2021**, *8*, 100186. [CrossRef]
7. Gil, A. Challenges on Waste-to-Energy for the Valorization of Industrial Wastes: Electricity, Heat and Cold, Bioliquids and Biofuels. *Environ. Nanotechnol. Monit. Manag.* **2022**, *17*, 100615. [CrossRef]
8. Gil, A.; Korili, S.A. Management and Valorization of Aluminum Saline Slags: Current Status and Future Trends. *Chem. Eng. J.* **2016**, *289*, 7484. [CrossRef]
9. Kieling, A.C.; de Macedo Neto, J.C.; Del Pino, G.G.; da Silva Barboza, R.; Diáz, F.R.V.; Rivera, J.L.V.; Fernández, M.V.; Ketterer, C.G.; Ortega, A.G.; Abarzúa, R.I. Development of an Epoxy Matrix Hybrid Composite with Astrocaryum Aculeatum (Tucumã) Endocarp and Kaolin from the Amazonas State in Brazil. *Polymers* **2023**, *15*, 2532. [CrossRef] [PubMed]
10. Neto, J.S.; de Queiroz, H.F.; Aguiar, R.A.; Banea, M.D. A Review on the Thermal Characterisation of Natural and Hybrid Fiber Composites. *Polymers* **2021**, *13*, 4425. [CrossRef] [PubMed]
11. Kieling, A.C.; Santana, G.P.; Santos, M.C.D.; Neto, J.C.D.M.; Pino, G.G.D.; Santos, M.D.D.; Duvoisin Jr, S.; Panzera, T.H. Wood-Plastic Composite Based on Recycled Polypropylene and Amazonian Tucumã (*Astrocaryum aculeatum*) Endocarp Waste. *Fibers Polym.* **2021**, *22*, 2834–2845. [CrossRef]
12. Neves, P.D.; Cabral, M.R.; Santos, V.; Mafra, M.R.P.; Junior, H.S. Technical Assessment of Leaf Fibers from Curaua: An Amazonian Bioresource. *J. Nat. Fibers* **2022**, *19*, 5900–5909. [CrossRef]
13. Nicolas, R.; Richard, B.; Nicolas, D.; Irina, I.; Temitope, K.J.; Dirk, L.; Viktor, M.; Romain, M.; Arnaud, P.; Ursula, P.; et al. Assessing the Fresh Properties of Printable Cement-Based Materials: High Potential Tests for Quality Control. *Cem. Concr. Res.* **2022**, *158*, 106836. [CrossRef]
14. Biricik, Ö.; Mardani, A. Parameters Affecting Thixotropic behavior of Self Compacting Concrete and 3D Printable Concrete; a State-of-the-Art Review. *Constr. Build. Mater.* **2022**, *339*, 127688. [CrossRef]
15. Li, R.; Lei, L.; Plank, J. Influence of PCE Superplasticizers on the Fresh Properties of Low Carbon Cements Containing Calcined Clays: A Comparative Study of Calcined Clays from Three Different Sources. *Cem. Concr. Compos.* **2023**, *139*, 105072. [CrossRef]
16. Lee, S.B.; Stone, G.C.; Antonino-Daviu, J.; Gyftakis, K.N.; Strangas, E.G.; Maussion, P.; Platero, C.A. Condition Monitoring of Industrial Electric Machines: State of the Art and Future Challenges. *IEEE Ind. Electron. Mag.* **2020**, *14*, 158–167. [CrossRef]
17. Shukla, K.; Nefti-Meziani, S.; Davis, S. A Heuristic Approach on Predictive Maintenance Techniques: Limitations and Scope. *Adv. Mech. Eng.* **2022**, *14*, 16878132221101009. [CrossRef]
18. Stojcic, M.; Zavadskas, E.K.; Pamučar, D.; Stević, Ž.; Mardani, A. Application of MCDM Methods in Sustainability Engineering: A Literature Review 2008–2018. *Symmetry* **2019**, *11*, 350. [CrossRef]
19. Banasik, A.; Bloemhof-Ruwaard, J.M.; Kanellopoulos, A.; Claassen, G.; Van Der Vorst, J.G. Multi-Criteria Decision Making Approaches for Green Supply Chains: A Review. *Flex. Serv. Manuf. J.* **2018**, *30*, 366–396. [CrossRef]