Editorial

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The fifth issue of *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* for 2021 contains four papers (Donyaii *et al.*, 2021; Haldar and Karmakar 2021; Huang *et al.*, 2021; Kaya *et al.*, 2021). These papers are on the following topics: waste management in China (Huang *et al.*, 2021); the effect of venting arrangements on Trombe wall thermal performance (Kaya *et al.*, 2021); the effect of crumb rubber additives on the mechanical properties of concrete (Haldar and Karmakar, 2021); and the use of meta-heuristic algorithms to optimise reservoir performance (Donyaii *et al.*, 2021). On behalf of the Editorial Panel, I hope that all readers enjoy reading these papers.

The first paper (Huang *et al.*, 2021) presents survey data where participants from academia, government and industry were asked to evaluate (using a 1–5 scale) the criticality of 18 identified critical

success factors (CSFs) for better management of demolition and construction waste materials in China. Statistical analysis of the survey data indicated that of the 18 CSFs ranked by the participants, the top five were: ‘Polluter-pays principle’; ‘Subsidies for recycling activities’; ‘Waste minimisation at the planning stage’; ‘VAT [value-added tax] deduction’ and ‘Penalties on violations’ (Huang *et al.*, 2021). Using the Mann–Whitney *U* test, Huang *et al.* (2021) also showed that the views of the industrial participants were generally statistically different to those of the academia and government participants.

The second paper (Kaya *et al.*, 2021) presents a numerical study using a computational fluid dynamics (CFD) model to parametrically investigate the effects on Trombe wall thermal performance due to changing the vent-to-wall-area ratio (some results are shown in Figure 1). Using this model, the authors

Figure 1. Time-dependent indoor temperature calculated at the midpoint room in CFD analyses for each case (taken from Kaya *et al.* (2021))

demonstrate that for a split vent configuration, 8% vent-to-wall-area ratio gave the best heating performance (measured by increase from the initial to the maximum mid-location room temperature) while for the monolithic configuration a 20% vent-to-wall-area ratio provided the best heating performance (Kaya *et al.*, 2021).

The third paper (Haldar and Karmakar, 2021) details an experimental study on the effects that the addition of various additives such as crumb rubber (CR) have on the mechanical properties of the resulting crumb rubber concrete (CRC). The authors conclude (in part) that while the addition of increasing amounts of CR results in reduction of the compressive and tensile strength of concrete this can be mitigated by the inclusion of Alccofine and silica fume, thus making CRC useful for non-structural applications (Haldar and Karmakar, 2021).

The final paper (Donyaii *et al.*, 2021) presents a comparison of two meta-heuristic algorithms to study how to optimally operate the Golestan dam reservoir in Iran, namely the ‘multi-objective FFA [Farmland Fertility Algorithm] (Moffa)’ and the ‘multi-objective HHO [Harris Hawks Optimisation] (Mohho)’

algorithms. The paper concludes (in part) that both algorithms can be used to improve the operation of the reservoir under changing climatic conditions (Donyaii *et al.*, 2021).

REFERENCES

- Donyaii A, Sarraf A and Ahmadi H (2021) Comparison of meta-heuristic algorithms in optimum operation of a single-reservoir dam system. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **174**(5): 251–264, <https://doi.org/10.1680/jensu.20.00065>.
- Haldar P and Karmakar S (2021) An experimental study on the fatigue properties of Alccofine-based crumb rubber concrete. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **174**(5): 235–250, <https://doi.org/10.1680/jensu.20.00080>.
- Huang Z, Ma M, Tam VWY and Lang H (2021) Critical success factors for developing construction and demolition waste management in China. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **174**(5): 213–223, <https://doi.org/10.1680/jensu.20.00053>.
- Kaya ES, Aksel M, Yigit S and Acikara T (2021) A numerical study on the effect of vent/wall area ratio on Trombe wall thermal performance. *Proceedings of the Institution of Civil Engineers – Engineering Sustainability* **174**(5): 224–234, <https://doi.org/10.1680/jensu.20.00064>.