

Editorial

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Welcome to the August 2023 issue of *Civil Engineering*. The papers in this issue show how by fostering collaboration and drawing inspiration from diverse fields, civil engineers can unlock innovative applications that go beyond conventional approaches to deliver infrastructure projects that the world needs today and beyond.

In our first paper, Surana *et al.* (2023) outline the challenges faced and how these were addressed during construction of India's first undersea tunnel on the Mumbai Coastal Road project. Tunnelling in challenging conditions below ground, including proximity to sea, high ground water, tidal variations, monsoon impacts, sinkholes and aquifers, as well as having to thread the giant tunnel boring machine (TBM) through the congested Mumbai streets and closely monitoring existing buildings, makes this project a fantastic example of civil engineering accomplishment.

In the next paper, Meng *et al.* (2023) elaborate how the use of varying thickness U-shaped stiffeners with full-penetration welds improved the fatigue performance of bridge decks in China. The Xiamen Second East Cross-Sea Bridge also adopted accelerated construction methods so that the marine environment was disturbed as little as possible. Digital models helped this large-scale scheme achieve efficient planning, coordination, communication and hence decision making, all of which contributed to successful project delivery.

In the third paper, James *et al.* (2023) discuss using Formula 1 racing-car flywheel technology to reduce construction site emissions. The concept was innovatively applied on the UK's High Speed Two (HS2) railway project for a site tower crane, resulting in reduced greenhouse gas emissions from its diesel generator. The positive outcomes are leading to further development and advances in flywheel telemetry, which will enable improvements in performance of the flywheel units and result in further reduction of emissions.

Li *et al.* (2023) then describe the repair options for damp-proof layers in heritage masonry buildings in China. One of the two case-study projects they looked at used the chemical injection method, while the other adopted the mechanical physical method, involving installation of a new reinforced concrete ring beam. The paper also includes a handy comparison table of both methods, which will be a helpful reference for future works.

I have found from my experience that the civil engineering community greatly benefits from the '3Cs' of communication, collaboration and contribution, and this is borne out by the papers in this issue.

For example, experience from the Indian ship-building community helped to develop the lifting and moving procedures for the Mumbai TBM, and flywheel technology developed for Formula 1 racing cars was adapted to reduce greenhouse gas emissions from a diesel generator on an HS2 construction site. Both these examples show how cross-industry collaboration can deliver a unique project solution.

By embracing innovative applications from diverse fields, civil engineers can build sustainable infrastructure, leverage technology-driven solutions, employ cutting-edge materials and explore unconventional techniques.

My sincere thanks go to all the authors who have freely put in their time and effort to share their experience and knowledge with us through these papers, and to the volunteer referees and assessors for reviewing them. This kind of civil engineering knowledge becomes an excellent repository for future reference, ignites the imagination of practising professionals and helps in furthering the collective contributions that the profession makes towards creating a better world for today and the future.

Please note that more recent 'ahead of print' papers can be found in the online version of the journal at www.icevirtuallibrary.com/toc/jcien/0/0, and remember that reading this journal counts towards your continuing professional development.

References

- James H, Zammit JP and Davidson A (2023) Using flywheel technology to reduce construction site emissions. *Proceedings of the Institution of Civil Engineers – Civil Engineering* **176(3)**: 129–136, <https://doi.org/10.1680/jcien.22.00254>.
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