

Editorial

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In this issue we see, once again, the global footprint of our journal with a paper from Brazil and two from Iran. The three papers deal with different aspects of the twenty-first century's future energy system. The papers underpin developments in renewable biofuels, in hydrogen energy and progress towards a more resilient future electricity system.

Carlos Alberto Nunes Cosenza and colleagues from Rio de Janeiro Federal University in Brazil report on their work in the domain of 'location research' (Cosenza *et al.*, 2017). The topic of concern is the optimised location of biodiesel industrial plants in Brazil. Locating such facilities should take proper account of a range of diverse factors including the existing physical infrastructure, the potential to supply the appropriate biomass feedstocks and various socio-economic factors. The work makes extensive use of geographic information systems (GIS) and indeed the paper includes a set of fascinating sample maps illustrating the key aspects of the research. The paper is most definitely a whole-system study and it is remarkable for the range of topics addressed. The scope of the project is large, indeed the system considered spans an entire large country.

A system view is also seen in the paper by Seyed Alireza Zareei and colleagues from Iran (Zareei *et al.*, 2017). In this case the system under consideration is not a whole country, but rather a key part of electrical supply – the power substation. Zareei *et al.* address a particularly serious issue in countries facing earthquake risk. Indeed, as I type these words my thoughts are drawn to the distressing news surrounding the three major earthquakes that have hit Mexico during September 2017.

Following a major earthquake, the response in terms of rescue and support for the survivors is greatly aided by the preservation of key infrastructures. Access to reliable electricity supply is one such vital consideration. Power supply requires generation, transmission and distribution. A well-designed grid

and a well-thought-out provision of generation assets can greatly mitigate risks, but if the power substations have been rendered ineffective by an earthquake then power supplies will not be available to facilitate vitally important work. Zareei *et al.* (2017) consider a series of practical interventions that can greatly reduce the risk of substation damage in an earthquake event. Mitigating the risks faced by the different key components of a power substation requires a set of tailored responses and these are described in detail in their paper.

In the third paper in this issue we again hear from Iran-based researchers, but we narrow the physical size of our concerns further and consider the performance of proton exchange membrane fuel cells (PEMFCs). Fed with clean hydrogen gas, PEMFCs have the potential to transform vehicle technology, as we move to a low-carbon dioxide future. Research into such possibilities has been going on for several decades, but in recent years advanced computer modelling has proven to be most helpful. Nima Ahmadi and colleagues from Urmia University of Technology, Iran explain the importance of properly understanding gas transport (Ahmadi *et al.*, 2017). Key to the design of an effective PEMFC is computer modelling of the hydrogen and oxygen gas transport. Ahmadi and colleagues explain that the early models in the field were one dimensional; these were then followed by two-dimensional models. The work presented in this issue is an example of a fully three-dimensional model and numerous illustrative figures of the three-dimensional modelling are provided in the paper.

In summary, this issue combines a diverse set of papers devoted to different issues facing the future resilient and low-carbon dioxide energy system. As always, we welcome readers' comments in response to the papers published in the journal. Advice on how to submit such comments is given at the end of each paper. Please do consider sharing your thoughts in this way.

I hope that you are considering publishing your energy-related research in the journal. As you can see we welcome a wide range of papers concerning different aspects of a variety of energy technologies. Our intention is to be oriented towards issues in engineering and technology. Authors should assume that the journal's readership is drawn from engineers and technologists centred on civil engineering. We ask that authors bear this in mind when planning articles.

As one can see from this issue, the basis of the journal is international, but nevertheless we require that all articles are presented in high-quality and appropriately idiomatic English. We regret that we are unable to improve English in submitted papers. We recommend that, if you are nervous about the quality of your written English, you arrange for your paper to be checked by a well-educated native speaker. Alternatively, ICE Publishing has collaborated with American Journal Experts (AJE) to provide English-editing services to improve the clarity and sense of your article. For further details, see <http://www.icevirtuallibrary.com/page/authors/editing-services>.

If you are unsure as to whether your planned paper would fall within the scope of the journal please contact the editorial

office (journals@ice.org.uk) and we shall endeavour to provide some informal advice.

Lastly, I would like to take this opportunity to draw your attention to an upcoming themed issue on the topic of coal in the twenty-first century. Details are available from the journal homepage at: <http://www.icevirtuallibrary.com/toc/jener/current>

I have enjoyed reading the papers in this issue, I hope you do too.

REFERENCES

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