

Editorial

I. Notes from the Editor

The West Indian Journal of Engineering (WIJE) is an international journal which publishes research in the engineering sciences, with relevance to the Caribbean. First published in 1967, WIJE is now its 43rd volume (No.1) as at July 2020.

WIJE Online is a static repository of approximately 800 peer-reviewed articles. Meanwhile, the website has limited functionality. With the support from the UWI - Campus Research and Publication Fund, WIJE had initiated a web project on “expanding the online interface of The West Indian Journal of Engineering to foster engineering research and publication in the Caribbean”. The project had commenced in 2018. The Journal Editorial Sub-Committee has been working over the past years on this project, and has been moving to the pilot testing phase.

The COVID-19 global health crisis is a unique challenge that has impacted many people, activities and projects, including the pilot testing of the WIJE-web project. The work schedule for testing had been postponed. It is expected that the testing be resumed in the coming months and be completed in line with the publishing of next January 2021 and July 2021 issues of the journal (i.e., Vol.43, No.2 and Vol.44, No.1). For facilitating the pilot test, it is planned to have a dual system with both the current operations and new pilot mode running in parallel for the coming issues.

II. About this Issue

For this Volume 43 Number 1, a total of 25 research/technical articles were received. Of them, six (6) manuscripts have been accepted, whereas ten (10) are still under peer review and nine (9) papers were rejected and/or not considered. The relevance and usefulness of the 6 accepted articles are summarised below.

E.I. Ekwue *et al.*, “Density-Moisture Relations of Two Trinidad Soils Obtained with a Soil Vibratory Compactor”, described the design of a mechanism and constructed of a soil vibratory compaction machine that vibrated the soil at a given time, amplitude and frequency and resulted in compacting the soil. The authors utilised a vibratory compactor working at the pre-determined parameters to test the density-moisture relations of two soils (sandy loam and clay) treated with peat at five different contents by mass and compacted at moisture contents which ranged from 5% to 55%. Similar tests were carried out using the standard Proctor test so as to compare the results. Results generally showed that although most bulk density values determined using the soil vibratory compactor were slightly lower than the values from the standard Proctor test, density values from the two methods were perfectly related. It was claimed

that the soil vibratory compactor could be used to estimate the bulk density values that are obtainable using the Proctor test. It could reduce the tedium involved in the standard Proctor soil compaction test.

In the article, “A Low-cost IoT Based Neonatal Incubator for Resource Poor Settings”, **S.C. Nwaneri *et al.***, explored the use of an Internet of Things (IoT) based neonatal incubator with phototherapy blanket to mitigate the problem of high infant mortality in resource poor countries. The incubator was constructed, and an IoT platform was developed for real-time monitoring of temperature and humidity of the incubator. Modelling and simulation of the incubator environment based on standard thermodynamic principles were performed using Python programming language. It was claimed that a relatively stable temperature and humidity suitable for an infant was observed in the developed device. The IoT platform was effective in monitoring the temperature and humidity of the device. The environmental conditions were found to be suitable for a neonate. The device was effective for real-time monitoring of environmental conditions in the incubator.

K.S. Banerjee, and S. Kassie, “Testing of Physical-Mechanical Properties of Blue Limestone Used in Pavements in Trinidad and Tobago: A Preliminary Study”, investigated the toughness and abrasion resistance of the aggregate prior to its usage in Trinidad and Tobago. It was found that aggregate crushing and aggregate impact values were nearly two times lower in the massive limestone than the layered limestone. The loads required for the 10% fines were more than two times lower in the layered limestone than the massive quality. The specific gravity values were different in layered and massive limestones (2.3 and 2.5 respectively). Moreover, these measured mechanical properties were combined into a single characteristic, Toughness Index (TI), as performance indicator of overall quality of aggregates. The TI values also suggested that the layered limestones were weaker than the massive limestone. The layered limestones did not satisfy the needs to be aggregates of international quality for pavement construction. The massive limestones were found suitable for this purpose.

O.A.A. Eletta, I.O. Tijani, and J.O. Ighalo, “Adsorption of Pb(II) and Phenol from Wastewater Using Silver Nitrate Modified Activated Carbon from Groundnut (*Arachis hypogaea L.*) Shells”, presented the findings of a study that was to remove Pb(II) and phenol from pharmaceutical wastewater using activated carbon derived from Silver nitrate modified groundnut shells. The adsorbents were characterised by Fourier transform infrared spectroscopy (FTIR), scanning electron microscope (SEM) and X-ray Diffraction (XRD) analysis. It was found that the adsorption of both Pb(II) and phenol was best fit to Langmuir isotherm and pseudo-second order kinetic models. The monolayer adsorption capacity

of the modified adsorbent for Pb(II) and phenol were 123.2 mg/g and 115.5 mg/g, respectively. The adsorption process for both Pb(II) and phenol was exothermic and spontaneous.

In the fifth article, “Differences between Technicians and Engineers: An Analysis Based on UK-SPEC”, **T.R.M. Lalla** and **N. Sangster**, examined the competencies and commitment requirements of five (5) generic areas for Engineering Technicians (EngTech), Incorporated Engineers (IEng) or Technologists, and Chartered Engineers (CEng), as specified by the United Kingdom Standard for Professional Engineering Competence (UK-SPEC). These areas are: Knowledge and Understanding (KU); Design and Development of processes, systems, services and products (DD); Responsibility, Management or Leadership (RML); Communication and Inter-personal Skills (CIPS), and Professional Commitment (PC). The similarities and differences have been articulated in keywords associated by specific roles and responsibilities of EngTech, IEng and CEng. The study analysed the job advertisements for recruitment of technicians and engineers in Trinidad and Tobago, with respect to the UK SPEC. The findings suggested that firm’s Top Management to clarify the blurred lines of roles, responsibilities and authorities amongst EngTech, IEng and CEng. Respective skills set of technicians versus engineers could be pooled to improve team effectiveness in their workplace. An Engineering Competency Structure (ECS) was proposed which could be of immense value to engineering professionals in fostering better teamwork between the two, hence increasing their effectiveness and efficiencies.

A. Koonj Beharry and **K.F. Pun**, “Contextual Analysis of Innovation Process Models toward the Fourth Industrial Revolution”, explored the innovation-industrialisation relationship, and related the evolution of innovation concepts to various phases of industrial revolutions. In this paper, advocates and features of nine (9) innovation process models in the innovation literature were analysed, and a comparative analysis of innovation processes was made. It compared the different stages of the innovation process as advocated in respective models, and identified their main contextual themes – 1) strategy; 2) management; 3) organisational culture; 4) organisational learning and 5) communication. Several endogenous factors were identified, and the most common ones, were customer-centric focus, market orientation and future-orientation (from the strategy domain), support for innovation (from the management domain), and inter-firm communication (from the communication domain). The paper contributed to the identification of the contextual themes and factors of innovation process models with organisational learning at the firm’s level.

On behalf of the Editorial Office, we gratefully acknowledge all authors who have made this special issue possible with their research work. We greatly appreciate

the voluntary contributions and unfailing support that our reviewers give to the Journal.

Our reviewer panel is composed of academia, scientists, and practising engineers and professionals from industry and other organisations as listed below:

- **Dr. Albert H.C. Tsang**, Hong Kong Polytechnic University, Hong Kong (HK)
- **Professor Andrew K.S. Jardine**; University of Toronto, Toronto, Canada
- **Professor Andrew Ordys**; University of Warsaw, Warszawa, Poland
- **Professor C. Elvis López Bravo**; Central University “Marta Abreu” of Las Villas, Villa Clara, Cuba
- **Dr. Chris Maharaj**; The University of the West Indies (UWI), St Augustine, Trinidad and Tobago (T&T)
- **Ms. Crista Mohammed**, UWI, St Augustine, T&T
- **Dr. Daniel White**; The University of Trinidad and Tobago (UTT), T&T
- **Professor Eugene D. Coyle**; Military Technological College (MTC), Muscat - Sultanate of Oman
- **Dr. Graham King**; UWI, St Augustine, T&T
- **Dr. Igor Jokanovic**; University of Novi Sad, Subotica, Republic of Serbia
- **Dr. Jeffrey Smith**; UWI, St Augustine, T&T
- **Dr. John Joseph**; Utilities Engineering Group, UTT, T&T
- **Mr. Kishore Jhagroo**; UWI, St Augustine, T&T
- **Professor Kit Fai Pun**; UWI, St Augustine, T&T
- **Professor M. Srinivas Kini**; Manipal Institute of Technology, Karnataka State, India
- **Ms. Man Yin Rebecca Yiu**, UWI, St. Augustine T&T
- **Dr. Mark Wuddivira**; UWI, St Augustine, T&T
- **Professor Oladipupo Ogunleye**; Ladoke Akintola University of Technology, Nigeria
- **Professor Olusegun Kehinde Abiola**; Federal University of Petroleum Resources Effurun, Nigeria
- **Professor Onkar Singh Bhatia**; Green Hills Engineering College Solan, India.
- **Dr. Rean Maharaj**; UTT, T&T
- **Professor Reynold Stone**; UWI, St Augustine, T&T
- **Dr. Sunil Rohan Tittagala**; Sheffield Hallam University, Sheffield, UK
- **Dr. Thomas F. Garrison**; King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia
- **Dr. Umesh Persad**; UTT, T&T

The views expressed in articles are those of the authors to whom they are credited. This does not necessarily reflect the opinions or policy of the Journal.

KIT FAI PUN, *Editor-in-Chief*

Faculty of Engineering,
The University of the West Indies,
St Augustine, Trinidad and Tobago, West Indies

July 2020