Editorial

I. From the Editor

On behalf of The West Indian Journal of Engineering, I would like to update with you some of its latest work in progress below:

Firstly, the current Volume 35, Number 1 is the first regular issue after an expeditious treatment of the backlog paper submissions over the past two years.

Secondly, both Phases 1 and 2 of the WIJE Website Project (http://sta.uwi.edu/eng/wije/), which digitised the journal's paper archives of recent 10 volumes (i.e., from Volumes 23 to 32), have been completed. Phase 3 would continue the Phase-2 work and extend it to include the paper archives of next 5 Volumes i.e., 18, 19, 20, 21 and 22 in reverse order.

Thirdly, we are pleased to announce the publication of a Special issue for the theme on 'Project Management/Engineering Initiatives and Challenges for a Sustainable World' (Volume 36, Number 1) that is targeted for publication in July 2013. Research and technical papers are invited and an extended deadline for submission is 1st December 2012. Details can be referred to the 'Call for Papers' documents and Authors' Guidelines in this issue.

As part of this WIJE initiative, proposals for special issues on topics of current interests in engineering, engineering management and related disciplines are always welcome. Please send a brief description of the concept for the issue to The Editorial Office, WIJE, c/o Faculty of Engineering, UWI (E-mails: uwije@sta.uwi.edu; KitFai.Pun@sta.uwi.edu). If the initial response is favourable, the Editor-in-Chief will request a specific plan and more detailed information to be used in the final decision about proceeding with the special issue.

II. About This Volume

This Volume 35 Number 1 includes nine research articles. The relevance and usefulness of respective articles are summarised below.

A. H. C. Tsang, "A Review on Trend Tests for Failure Data Analysis", reviews available statistical tests commonly used for detecting trends in failure events collected over time and the underlying hypotheses being tested. Trend detection is an important task in failure data analysis in both reliability and maintenance. Directions for future research on statistical trend tests are suggested at the end of the paper. These suggestions will address issues concerning analysis of failure data obtained from single and multiple systems.

T. S. Seecharan and G. J. Savage, "Metamodel-Based Probabilistic Design of Static Systems", focus on moving the means of the design variables to search for a reduced failure probability. Most research deals with cases where design variables are deterministic thus ignoring possible uncertainties present due to manufacturing or environmental conditions. When uncertainty is considered, the design variables follow a particular distribution whose parameters are defined. Parameter design aims to reduce the probability of failure of a system by moving the distribution parameters of the design variables. This paper presents a methodology that uses approximating functions (called 'metamodels') to search for the design parameters that minimises the probability of failure.

S. Vallamsundar, K. Ponnambalam and G. Cascante, "An Automatic Classification Tool for Non-destructive Testing for Use in Structural Maintenance", evaluate some new non-destructive testing methods based on ultrasonic waves that involve analysing a large amount of time series of data to classify the structural state of the system. In this paper, a decision support system is demonstrated with classification ability for non-destructive testing of materials for defect classification and characterisation. The classification is performed using artificial intelligence and statistical techniques. From the classification results, it was found that the classification results establish the applicability of simplified methods such as k-NN in defect characterization.

D. A. Janes, "Practical Options for Desktop CFD Using Open-Source Software", reviews available open-source CFD (Computational Fluid Dynamics) software that is available in compiled executables, which runs on the Microsoft Windows line of operating systems, as a means of keeping budgets down while still building up local expertise. Two pre-processors, three CFD-solver programs and one post-processor are scoped. From these packages, a useful CFD toolbox consisting of a pre-processor, a solver and post-processor could perform useful CFD simulations on the Microsoft Windows platform to meet the demands of the process industries in Trinidad and Tobago. The right combination would depend on the future intentions of the CFD-user.

T. F. Campbell, W. A. Mellowes and C. Lindsay, "Amino Acid Profiling and Nucleic Acid Determination of Single Cell Protein", attempt to utilise overripe bananas and plantains (which are rich in carbohydrates) in fermentation processes to produce microbial protein. A study was conducted to determine the protein content, nucleic acid content and essential amino acid profile of the single cell protein (SCP) isolates recovered from the fermented pulps of bananas (Lacatan variety, Musa acuminate) and plantains (French variety, Musa paradisiaca). The results provide a source of protein that can be used to fortify both food and feed. With increase in population and worldwide protein shortage, the use of microbial biomass as food and feed is encouraged.

J. Marcelle-De Silva and S. Mohammed, "Edge Water Drive Detection and Movement from Buildup Data in a Gas Reservoir", examine several surveillance tools which are employed to assist with reservoir management.

In this study, pressure transient surveillance data from successive pressure buildup tests conducted on two wells, each located in separate gas reservoirs, were collated and analysed. It was showed that identification of the recovery mechanism allowed for the early identification of recompletions and opportunities for new wells. This demonstrated the importance of pressure transient data as a reservoir surveillance tool.

G. Eudoxie and S. E. Hitlal, "Efficiency of Polyacrylamide Polymers in Settling Aggregate Mining Tail Water", present the results of studies on the behaviour of aggregate tail water from Vega Minerals Quarry amended with a range of polyacrylamide (PAM) flocculants. Water reuse and recycling systems in aggregate mining operations require assisted flocculation to meet in-process and environmental quality standards. The tail water was highly turbid with ~37 g solid L^{-1}. Particle distribution favoured the clay range, but there was an influential amount of larger particles. From the study, stabilisation effects were observed for the anionic PAMs at doses greater than 4 mg L^{-1}, with the lower charged PAM showing overall lower turbidity. The low charged, lower molecular weight anionic PAM is recommended for treatment of these tail waters.

S. M. Adedayo and M. A. Onitiri, "Tensile Properties of Iron Ore Tailings Filled Epoxy Composites", examine the tensile properties of the Iron ore tailings reinforced epoxy composite (ITR-EC). A uniaxial tensile test was carried out on the ITR-EC produced to obtain stress-strain curves from which tensile yield, tensile strength and Young's modulus curves with varying volume content of iron ore tailings and particle size were generated. Efforts are made to determine the optimum percentage volume of iron ore tailings used in the composite. Empirical data from the tensile test were compared with the Nielsen's, Bigg's and Einstein's equations. It was found that 30% volume content of 300 µm iron ore tailings gave the maximum Young's modulus of 4.83% greater than that for pure epoxy.

S. Jaggan and D. Davis, "Evaluating Satellite Altimetry for Monitoring Caribbean Sea Level Rise", investigate into the method of satellite altimetry data that is used to determine sea level change in the Caribbean region. A comparative analysis is undertaken using data collected at eight tide gauge stations over a ten-year period. Derived from the satellite altimetry technique, the sea level anomalies agree with the tide gauge data with a Root Mean Square of 0.058m. It is found that the sea level change rates are on average ± 0.45mm/year within the tide gauge results, confirming the viability of satellite altimetry as a technique to determine sea level variations for the Caribbean region.

III. Acknowledgements

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:

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