

UNESCO 9th Africa Engineering Week & 7th Africa Engineering Conference 2023

Technical Papers Session: Programme

Date	Session Number	Time	Venue	Activity and Theme	Modality	Chairperson/ Keynote speaker	Papers
25/09/2023 Day 1 Morning Session	Parallel Session 1A	11:00 - 13:00	Diamond	Panel Discussion: <i>Power & Renewable energy</i>	Hybrid	Chairperson: Engr. Tasiu Sa'ad Gidari-Wudil (Nigerian Society of Engineers - President)	<ol style="list-style-type: none"> 1. An Approach to Resolving the Integrative Conflicts of Renewable Energy in South Africa: A Technical Overview (Galalelo Olive Monyaki, Sogo Mayokun Abolarin and Louis Lagrange) 2. Facilitating Africa's Transition into Renewable Energy Striking a Balance between Economic Growth and Net-Zero Emissions (Resego Tsiane and Emmanuel Pax Makhura) 3. Situational Awareness of Power System Using Phasor Measurement Unites (PMUs) - (Engr. Tasiu Sa'ad Gidari-Wudil) 4. Adapting to Fluctuating Power Demand: Integrating GANs and RL for Efficient Renewable Energy Systems in a South African Context (Joseph Tafataona Mtetwa, Kingsley Ogudo and Sameerchand Pudaruth)

	Parallel Session 1B		Ruby	Panel Discussion: <i>Policies, Accreditation, Harmonisation</i>	Hybrid	Chairperson: Eng. Papias Kazawadi (Federation of African Engineering Organisations - President)	Harmonization of Engineering Policies, Accreditation and Standards in the African Continent (Yashin Brijmohan, Martin Manuhwa, Jones Moloisane, Dr Moses Olayemi and Prof Chuah Hean Teik)
13:00 -1400 LUNCH							
25/09/2023 Day 1 Afternoon Session	Parallel Session 1A	14:00 - 15:30	Diamond	Paper Presentation: <i>Power & Renewable energy</i>	Hybrid	Chairperson: Mr Clever Banganayi	<ol style="list-style-type: none"> 1. Detection Of Potential Faults In Underground Low-Voltage Cables: A Review of Suitable Techniques (Gideon Kepadise and Prof. Pieter Van Vuuren) 2. Mesophilic Batch Anaerobic Digestion of Wet Blackwattle Leaves and Cow Manure Mixture for Methane Production (Boniface Kangire Tambro, Carlo Van-Zyl and Danie Hattingh) 3. Numerical Investigation of AB2 Metal Hydride Systems for Hydrogen Storage (Molefe Ntswana and Lucey Mavhungu)
	Parallel Session 1B	14:00 - 14:30	Ruby	Keynote Address: <i>Buildings & Places</i>	Hybrid	Keynote speaker: Eng. Linda Moseki (Southern African Federation of Engineering Organisation - President)	Infrastructure as an enabler to Development in the African Continent
	Parrallel Session 2B	14:30- 15:30	Ruby	Paper Presentation: <i>Buildings & Places</i>	Hybrid	Chairperson: Prof Didier Nyembwe	<ol style="list-style-type: none"> 1. Aligning Asset Management Reporting Requirements to Technical Standards (Nichal Rajnandan) 2. A review of Incorporating Recycled Crushed Clay Bricks in Construction 3D

							Concrete Printing (Khayakazi Nongwane, S.A. Alabi and J Mahachi) 3. A Review of Optimization of Limestone and Calcined Clay Cement (LC3) Concrete Mixtures for 3D Printing (Tariro Emily Ndarowa, Bolanle Ikotun and Jeffrey Mahachi)
26/09/2023 Day 2 Morning Session	Parallel Session 1A	11:00-11:30	Diamond	Keynote Address: <i>Successful PPP projects</i>	Hybrid	Keynote speaker: Dr Alec Moemi (Head: Infrastructure South Africa)	Success and Challenges of the Private-Public Partnership in the Infrastructure projects: South Africa's experiences
	Parallel Session 1B		Ruby	Keynote Address: <i>ICT</i>	Hybrid	Keynote speaker: Dr Mukondeleli Grace Kanakana-Katumba (Tshwane University of Technology Executive Dean: Engineering and Built Environment)	The role of ICT in the Engineering Development under the 4IR era and beyond: South Africa's experiences
	Parallel Session 2A	11:30 - 13:00	Diamond	Paper Presentation: <i>Successful PPP projects</i>	Hybrid	Chairperson: Mr Pascal Motsoasele	1. Successful Public Private Partnership Projects (Keabetswe Jane Pholo) 2. Lessons Learnt in Dispute Resolution during Construction of Spring Grove Water Treatment Works in KwaZulu Natal, South Africa (Gcwalisile Kunene) 3. Two Decades of Assessing the Condition of South Africa's Fixed Infrastructure, Both

							Directly and through the Service Delivery Consequences (Kevin Wall)
	Parallel Session 2B		Ruby	Paper Presentation: <i>ICT</i>	Hybrid	Chairperson: Mr Ada Dienga	<ol style="list-style-type: none"> 1. Digital Transformation, a Catalyst for Africa's Economic Growth (Lone Batshegi and Prince Kayode Owolabi) 2. A Review of Technologies and Recent Developments in Urban Air Mobility (Makhabane Molapo) 3. Digital Transformation: Utilising Automaton to Optimize Design Processes: from the perspective of Consulting Engineering (Aasif Bapoo and Dawit Seyoum) 4. Digitally Transforming Processes in Civil Engineering and The Built Environment with BIM: A Glance at BIM Across the African Continent (Shuaib Yunos)
13:00-14:00 LUNCH							
26/09/2023 Day 2 Afternoon Session	Session 1	14:00 - 15:30	Diamond	Poster Presentation: <ul style="list-style-type: none"> - <i>Buildings & Places</i> - <i>Power & Renewable energy</i> - <i>Policies</i> - <i>Accreditation</i> - <i>Harmonisation</i> - <i>ICT</i> - <i>Transport and Mining</i> 			<ol style="list-style-type: none"> 1. Programme Management of Enterprise Transformation Programmes as Experienced in the Public Sector in South Africa (Dr Henk van Rensburg and Dr Anton Maneschijn) 2. Systematisation Over Standardisation: Encoding Tacit Engineering Knowledge for Incremental Transformation (Astrid van der Laan, Rowland Burke, Dr Andre Broekman and Richard Matchett) 3. Model Development, Evaluation and Optimisation of Nutrients Removal in a Single and Double Stage Strategy for Sequential Batch Reactors (Teboho Jakuja) 4. Machine Learning of Chlorine Decay and

							<p>Demand Models in Water Distribution Systems (Donald Maphanga, Lucey Mavhungu, Masindi Vhahangwele and Akinwekomi Vhahangwele)</p> <p>5. New Methods to Assist Predicting Flash Flood Levels (Prof J Pieter Pansegrouw)</p> <p>6. Averting the Risk of Groundwater Contamination through routine Tank Cleaning (Benedict Atta Poku)</p> <p>7. Perpetual Motion Electric engine (Omondi Onyango and Shane Shitanda)</p> <p>8. Resource Management in Network Slicing using Deep Reinforcement Learning (Tadiwa Mavende and Malcolm Sande)</p> <p>9. The Digital Transformation Gap Between Universities and Industry (Gumani Mukhuba, Sheldon Machabe and Hlamulo Pride Ndlovu)</p> <p>10. Promoting Student Engagement through Digital Transformation in African Universities (Patience Nondumiso Mofokeng and Luke Oluwabusayo Babalola)</p> <p>11. 21st Century Engineering: What Do the Next 50 Years Look Like for an Engineer? (Eng. Nsiimire Annet)</p> <p>12. Ailing Transportation Challenges (Gift Mpho Mogodi)</p>
27/09/2023	Parallel Session 1B	11:00-11:30	Ruby	Keynote Address: <i>Water</i>	Hybrid	Keynote speaker: Abraham Vermeulen (EXCO member of the	Engineering and Water Infrastructure in the African Continent

Day 3 Morning Session						SAICE water engineering division)	
	Parallel Session 1A		Diamond	Keynote Address: <i>Mining</i>	Hybrid	Keynote speaker: Prof Glen Nwaila (Wits Mining Institute - Director and Adjunct Professor)	Mining and Virtualization in Africa
	Parallel Session 2B	11:30 - 13:00	Ruby	Paper Presentation: <i>Water</i>	Hybrid	Chairperson: Prof Madindwa Mashinini	<ol style="list-style-type: none"> 1. An Integrated Domestic Rainwater Harvesting System as an Alternative Water Source: A Case Study of Bethlehem Town, Free State, South Africa (Simpfiwe Biyela, Julius Ndambuki and James Magidi) 2. Systematic Review of Processes for Advanced Treatment of Brewery Water for Water Reuse Purposes (Iwalda Bezuidenhout and Precious Biyela) 3. Assessment of Long-Term Water Demand for Umgeni System Using Water Evaluation and Planning Considering Demographic and Extended Dry Climate Periods (Vernon Nagan, Mohammed Seyam and Taher Abunama)
	Parrallel Session 2A		Diamond	Paper Presentation: <i>Mining</i>	Hybrid	Chairperson: Prof Teresa Hattingh	<ol style="list-style-type: none"> 1. Mine's Robust Erosion Mitigation System Required to Convey Clean Mine Runoff Safely to the Receiving Environment (Zwelibanzi Richard Hendrick Mahlangu) 2. Investigating the Adsorption Mechanisms and Thermodynamics of Alkaline Gelatinised Novel Depressants on

							Pyroxene Surface (Walter Amos Ngobenja and Antoine F. Mulaba-Bafubiandi) 3. Unsupervised Clustering of coal plant operation models using GMM-LSTM models (Makomane Dorothea L. Sekhoto and Akihiro Fujii)
13:00-14:00 LUNCH							
27/09/2023 Day 3 Afternoon Session	Parrallel Session 1A	14:00 - 15:30	Diamond	Keynote Address: <i>Transport</i>	Hybrid	Keynote speakers: Mr Sekadi Phayane (South African Institution of Civil Engineering - CEO) and Mr Friedrich Slabbert (Executive Director - Sciendum Academy)	TBC
				Paper Presentation: <i>Transport</i>	Hybrid	Chairperson: Dr Takalani Madzivhandila	1. Investigating the long-term field performance of enzyme treated materials on three pilot sites in Pretoria, Gauteng (Kholwani Joseph Dube, Aubrey Shabangu and Mmanakhe Mokitimi) 2. The Use of Geopolymers in Warm Mix Asphalt Technology – A Review (Tado Shoke, Bolanle Deborah Ikotun and Jeffrey Mahachi)
	Parrallel Session 1B	14:00 - 15:30	Ruby	Meeting: <i>FAEO</i>	Hybrid		FAEO Regional strategic Meetings