



NAMIUBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Faculty of Engineering

Research Day

Theme: Forging Links between Industry and Academia

Date: Friday, 27 July 2018

Time: 08:30 - 16:40

Venue: Mining Auditorium



2018

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KEYNOTE SPEAKER



Mr Robert Kahimise, CEO, City of Windhoek

Abstract

At the City of Windhoek, several departments are actively engaged in contributing to the implementation of our vision: **'To be a Smart and Caring City by 2022'**. The City of Windhoek is working to be known as a smart city that employs information and other technologies to achieve effective and transparent governance, a clean environment, financial sustainability, green technological advances, and the provision of affordable innovative services. Furthermore, as a caring city we have adopted the pillars of the Harambee Plan, focusing on vibrant socio-economic progress, public safety, people-focus, and affordable service orientation. To this end, our mission statement is: **'To enhance the quality of life for all our people by rendering efficient and effective municipal services'**. Sound engineering practice holds the key to the sustainable achievement of this vision of a smart and caring city. We will also explore further the training of engineering professionals through appropriate linkages and collaboration with NUST and other institutions in Namibia.

KEYNOTE SPEAKER



Professor Cyril O'Connor, Department of Chemical Engineering, University of Cape Town

Abstract

Over the past half century, it has become globally more important for universities to interact with industry. Originally, this largely came about through a view that universities were complacent, because they were over-protected from the market, needed to become more accountable for their sustainability and research funding and become more responsive to market forces. The experience in the UK and the US both provide interesting insights into many of the benefits and some unintended negative consequences of placing greater pressure on universities to generate income from industry linked research. One of the key challenges has been to ensure that in becoming more reliant on industry sponsorship of university research, the core mission of a university is not distorted. However, if well managed, such links can be of major value to both the industry and the university. In this presentation the broad challenges presented by the development of such linkages will be explored and the opportunities, as well as the threats associated with greater engagement between industry and universities will be assessed. Examples will be given of some programmes, which have resulted in major benefits for both industry and universities.

1. PROGRAMME

Director of Ceremonies: Dr Samuel John: Dean, <i>Faculty of Engineering</i>		
Time	Activity	Presenter
08:30	Registration and Tea	
09:05	Welcoming Remarks	Dr Tjama Tjivikua <i>Vice-Chancellor</i> <i>NUST</i>
09:15	Keynote Address	Mr Robert N Kahimise <i>Chief Executive Officer</i> <i>City of Windhoek</i>
09:50	Keynote Address	Prof Cyril O'Connor <i>Professor Emeritus: Chemical Engineering</i> <i>UCT</i>
10:25	Vote of Thanks	Dr Andrew Niikondo <i>DVC: Academic</i> <i>NUST</i>
10:30	Tea	
11:00	Presentation	Ms Foibe Namene <i>Chief Executive Officer</i> <i>Electricity Control Board (ECB)</i>
11:20	Presentation	Dr Thomas Honer <i>General Manager</i> <i>Wingoc</i>
11:40	Presentation	Mr Kahenge Simson Haulofu <i>Managing Director</i> <i>NamPower</i>
12:00	Panel Discussion	
13:00	Lunch	
14:00	Presentation	Dr Michael Sony <i>Mechanical and Marine Engineering</i>
14:20	Presentation	Prof James Katende <i>Electrical and Computer Engineering</i>
14:40	Presentation	Prof Victor Kamara <i>Civil and Environmental Engineering</i>
15:00	Presentation	Prof Godfrey Dzinomwa <i>Mining and Process Engineering</i>
15:20	Tea and Viewing of Posters	
16:00	Prize-giving	Dr Tjama Tjivikua
16:20	Vote of Thanks	Dr Samuel John

FACULTY ABSTRACTS

STRATEGIES FOR ENHANCING UNIVERSITY-INDUSTRY LINKAGES ON THE AFRICAN CONTINENT

Prof James Katende

Department of Electrical and Computer Engineering

Abstract

Contributions of universities to national development are essentially in the form of knowledge creation, innovation, and impartation of hard, as well as soft skills such as problem-solving, analytical thinking and technical communication to students. However, there is a general perception of gaps between the knowledge and skills imparted and the expectations of industry. The paper discusses the ramifications of the perception, the motivations for undertaking university-industry linkages (UIL), and the barriers to establishing such linkages on the African continent. Strategies for enhancing collaborations and UILs are then proffered.

Keywords: University-industry linkages, skills gap, engineering education, research and development, and innovation

TOWARDS INNOVATIVE MINERAL RESEARCH IN NAMIBIA

Prof Godfrey Dzinomwa

Department of Mining and Process Engineering

Abstract

In Namibia, as it is globally, the minerals industry is faced with decreasing ore grades, with some of the remaining ores being increasingly complex in terms of their amenability to processing. Furthermore, environmental requirements are becoming more stringent in order to avoid the excesses that contributed to undesirable outcomes such as unchecked climate change and global warming in the past.

Mineral commodity prices, however, have presented mixed fortunes with some remaining depressed, especially for Uranium, while the prices of the battery minerals particularly Lithium and related elements, are rising steadily. In both cases it is the role of research and innovation to provide cost-effective ways to solve the challenges posed on one hand, and to take full advantage of the opportunities presented on the other.

This paper presents some of the steps taken and progress achieved by the Department of Mining and Process Engineering at the Namibia University of Science and Technology (NUST) to build its capacity and position itself to reach out to industry and to play a proactive role in applied research. It also summarizes some industry-focused research that has been successfully completed, as well as plans for future work.

COMPREHENSIVE STUDY ON THE USE OF SELECTED LOCALLY PRODUCED AGRICULTURAL RESIDUES IN NAMIBIA TO PRODUCE THERMAL EFFICIENT INSULATING MATERIALS USED IN IMPROVING ENERGY EFFICIENCY IN BUILDINGS

Onjefu, A; Kamara, V S; Chisale, P

Abstract

The growing increase of human activities in recent years has resulted in an unprecedented increase in energy consumption. With very little awareness in the utilization of Renewable Energy in some regions in Africa, the emergence of new innovation in construction technologies with respect to energy efficiency is minimal, leading to high energy consumption costs in ensuring appropriate comfort levels in buildings, especially residential buildings.

This research looks at using locally produced agricultural residues in Namibia to develop appropriate materials that can be used to ensure more efficient energy design in residential buildings in Namibia or any other temperate, semi-arid regions in the world. Eleven (11) samples of a well-defined percentage of mixed maize, millet, rice husks and cow dung residues labelled A to K were designed in the form insulating boards of 220 cm length, 110 cm breath and 40 cm height at varying mix ratios. Thermal conductivity tests conducted after appropriate compaction, 2-5 days curing under normal temperatures, samples revealed that Thermal Conductivity and Thermal Resistivity of sample C (20% maize, 10% millet, 30% rice and 40% cow dung) are 54.65 mW/(m*K) and 0.6935 m²K/W respectively giving it the highest energy efficiency ratio, due to its low Thermal Conductivity and highest Thermal Resistivity compared to the other mixed samples.

STUDENT POSTER TITLES

Department of Civil and Environmental Engineering

1. **Design of a New Bulk Water Supply System for Rundu Town**
 - Supervisor: Mr Liberty Moyo
 - Students: Tawanda Mutede, Jernay Wingrove, Maria Antonio and Erastus Ashipala
 2. **Design for Equalisation of Hydraulic and Organic Loading at Gammams Water Care Works**
 - Supervisors: Dr Chris Reynders (Academic) and Ms Haihambo Justina (Industrial)
 - Students: Amutenya Maggina Shungileni, Uusiku Rut Lengalimwe, Haitula Job Muukaefina and Shifula Abner Kalaputse
 3. **Design of a Road Link between Springbok Street and Auas Road and the Upgrading of the Intersection of Auas Road with Aviation Street**
 - Supervisors: Candidus Tomeka, Dr Chris Reynders, Cletus Nyongesa, Vincent Wesonga.
 - Students: John Henderson Hunter, Keith Wabomba Singoro, Virgil Virgillio Visagie, Andrea Shaffie
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Department of Electrical and Computer Engineering

1. **Solar Energy Potential and Performance Assessment of CSP Technologies in Selected Locations of Namibia**
 - Supervisor: Prof James Katende
 - Students: Toini-Secilia N Shikongo and Saara N Ipinge
 2. **Performance Assessment of Grid-tied PV System. A Case Study of the NUST Civil and Mining Engineering Building Rooftop Solar PV**
 - Supervisor: Mr Gideon Gope
 - Student: Kaluwa Stephen Tugamen
 3. **Smart-home: IoT based Controlled Home Automation System with Surveillance**
 - Supervisor: Prof Zac Oyedokun
 - Student: Petrus Haukongo
-

Department of Mechanical and Marine Engineering

Posters: Master of Industrial Engineering

1. **An Evaluation of the Maintenance Strategy for Haul Trucks: Case Study of a Selected Mine in Namibia**
 - Supervisors: Dr Rajaram Swaminathan, Prof Michael Mutingi.
 - Student: Atejioye Anthony

2. **Business Processes Analysis and Re-engineering for Radio Manufacturing: A Case Study at Sat-Com (Pty) Ltd, Namibia**
 - Supervisors: Prof Michael Mutingi
 - Student: Haixula Paulina S N
 3. **A Failure Mode, Effect and Criticality Analysis-based Maintenance System**
 - Supervisors: Dr Rajaram Swaminathan, Prof Michael Mutingi
 - Student: Kanyemba Ndahafa N
 4. **Assessing the Level of Adoption of Quality Improvement Tools in Selected Public Hospitals in Namibia**
 - Supervisors: Prof Michael Mutingi, Prof Damas Mashauri
 - Student: Shihepo Pentti
 4. **Improving the Revenue Collection Processes for Namibian Local Authorities**
 - Supervisors: Prof Michael Mutingi, Dr Harmony Musiyarira
 - Student: Shikongo Henok K
-

Bachelor of Engineering

1. **Stationary Engine Performance and Emissions Tests on OBD-enabled Volkswagen 1.8-litre Golf IV Engine**
 - Supervisor: Mr A D Zulu
 - Student: Namhila E N
2. **The Shadow Effect of a Tubular Tower on Wind Measurement**
 - Supervisor: Mr E M Okorie
 - Student: Sackeus S
3. **Haptic Feedback Remote-Controlled Gripper**
 - Supervisor: Mr A D Zulu
 - Student: Calitz P R

Bachelor of Technology

1. **Design and Manufacture of a Briquetting Machine**
 - Supervisor: Dr R Swaminathan
 - Student: Ondaye J F
2. **Investigating the Potential of Eemeke Oil as a Source of Renewable Energy**
 - Supervisor: Mr E Strydom
 - Student: Kahohoi S K
3. **Investigation of Energy Efficiency a Result of a House Built with Geoplast Modulo**
 - Supervisor: Mr B. Nghidinwa
 - Student: Ambuga J N

Department of Mining and Process Engineering

1. **Test Work to Examine the Potential for Improving the Gold Leaching Performance at Navachab Gold Mine, Namibia**
 - **Supervisors:** Prof D Groot, Mr I Matsika
 - **Student:** Amwele M N
2. **Flotation of Calcite and Gypsum from Low Grade Trekkopje Uranium Ore, Namibia**
 - **Supervisors:** Prof C Magombedze, Mr L Eimann
 - **Student:** Handuba A J
3. **An Investigation into the Application of X-ray Fluorescence Technology to Upgrade Low-grade Ore at Rosh Pinah Mine**
 - **Supervisors:** Mallikarjun Pillalamarri and Duan Campbell
 - **Student:** Eimann Charné
4. **A Performance Analysis of the Mine Machinery at Rosh Pinah Zinc Mine**
 - **Supervisor:** Lawrence Madziwa
 - **Student:** Armando T



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