2384 Bathgate Street
Centurion
0046

Cell: +27 83 412 0853
Tel: +27 11 800 3612
Email1: Khayakazi.dioka@eskom.co.za
Email2 (alternative): kdioka@gmail.com

Ms Khayakazi C. Dioka (Pr Eng)

Experience

01 March 2017 to date | Corporate Specialist Transformers and Reactors | Eskom Power Delivery Engineering

Corporate Specialist – Transformers and Reactors

On 01 March 2017 I was appointed as a corporate specialist for transformers in Substation Equipment and Diagnostic department, under Eskom Transmission Asset Management. My key responsibilities include:

- Leading the development of Eskom Transmission Technology Roadmap and research roadmap
- Transformers design reviews, specifications, high voltage testing, maintenance, repairs, and tenders technical evaluations. I have led several design reviews, factory acceptance testing and technical tender evaluations for transformers of sizes ranging from 315kVA 22/0.4kV to power transformers of 800MVA 765/400/33kV.
- Leading Transformer severe failure investigations for different ranges of transformers and reactors.
- Perform Asset Health Appraisal for Transformers and Reactors and provide guidance on asset health status.
- Compile engineering reports on transformer technologies, project initiations.
- Liaise with transformer supplier for all transformer technical related issues, including operational performance.
- Offering technical guidance and support to the functional groups within Eskom, for all transformer and reactor related matters.
- Offers courses on transformer life cycle management, transformer protection and transformer sanctioning following a trip.

Other Experience & Achievements	• Eskom Woman of the year 2021 runner-up • CIGRE Women in Energy Award 2022 recipient • Honorary Secretary for CIGRE Southern Africa national committee since March 2022. • CIGRE SA Executive Board Member responsible for increasing participation of women and young engineers. • CIGRE Study Committee A2 strategic team member and convener for Transformer Technology Advisory Group. In this role, I lead the discussions on Transformer technology work, which CIGRE then adopt for future work and develops international guidelines for the transformer technology. These guidelines influence the international standards on transformers. • International Chair for CIGRE Women in Engineering (WiE) (2018 -2022), responsible to increase active participation of women engineers within the CIGRE structure. To date I have increased the number of national committees with women in engineering forum, thus increasing diversity and voice for women participation. I have introduced Women in Engineering Award as one of the CIGRE awards, introduced mentorship platform on CIGRE online platform, hosted several WiE forum sessions around the world, and continue to source ways of increasing women engineer participation. As CIGRE WiE chair, I also sat on the highest decision- making committee at CIGRE, the CIGRE Steering Committee. • I have chaired several conferences, including Doble Conference, SAIEE Conference, CIGRE SA regional conferences, IEEE Women in Power sessions, led CIGRE Regional Conference technical committee, which included reviewing of technical papers for content and quality acceptance, ensuring the technical program runs smoothly and coordinate session and conference award nominations. • I am an editorial board member of the CIGRE editorial team. In this team, I source and review articles for CIGRE Electra publication. I have authored and reviewed several articles. • I have published several technical papers at different conferences. • I served in procurement tendering committees, representing technical function. From this, I learned about the complete procurement processes, the PPPFA. I was also nominated as an alternative chair for an operational tender committee. • I have obtained a certificate in Professional Directors, PD (SA)
Experience	01 April 2013 to 28 February 2017 Chief Engineer Transformers and Reactors Eskom Power Delivery Engineering **Chief Engineer – Transformers and Reactors** On 01 April 2013 I was appointed as a chief engineer for transformers in High Voltage Plant department, under Group Technology. My key responsibilities include: • Transformers failure investigations • Perform Asset Health Appraisal for Transformers and Reactors • Engineering reports on transformer technologies, project initiations. • Transformers design reviews, specifications, high voltage testing, maintenance, repairs, and tenders technical evaluations. • Liaise with transformer supplier for all transformer technical related issues, including operational performance. I have pioneered cost saving opportunities on transformer bushing storage methods. I have also led the Transformer stream on Eskom collaboration with Electricite de France (EdF), where the team reviewed the two utilities specification, design software tools, transformer life cycle management and investigation techniques. I led the Eskom/EdF seminar, which attracted both Eskom and municipality engineers where the findings of this collaboration were shared.

Experience	01 April 2012 –31 March 2013 Energy Planning Senior Engineer Eskom Energy Planning and Market Development **Senior Engineer – Energy Planning** On 01 April 2012 I was appointed as a senior engineer in energy planning department. My key responsibilities include: • To provide a long term energy planning capacity • Perform economic and environmental studies • Conducting research on integrated energy planning methods, and developing new techniques, adapting them where appropriate • Continuous assessment of the role of Eskom in the energy sector • Develop the capability to undertake resource planning and investment planning activities within the electricity sector • Build up relationships and interacts with the stakeholders on regular basis I worked on a DoE project, which is a software capability test for the development of the Integrated Energy Plan. I also started modeling Transmission network on Plexos software in order to model the Eskom network as a multi node network as oppose to the current single node model.
Experience	01 April 2009 –30 March 2012 Power System Protection Senior Engineer Eskom System Operations and Planning **Senior Engineer – Protection Settings** On 01 April 2009, I was appointed as a Senior Engineer in the Power System Operations Performance Department. My responsibilities include the following; • Calculation of protection settings for Transmission and sub Transmission equipment • Template development in Microsoft Excel and Visual Basic for the calculation of protection settings for new protection relays. • Verifying the correctness of protection settings calculated by other protection engineers to ensure quality settings are being issued. • Assist in relevant fault investigations where settings are suspected to be erroneous. • Provide a consulting service to field and commissioning staff as required • Provide emergency settings within 24hours when required. • Provide continuous on-job training for engineers and technicians. During this period, I have worked on and coordinated different projects to strengthen the Eskom grid. These projects include Johannesburg North Strengthening Project, Vaal Strengthening. The work that I did included doing calculations for network changes while moving feeders from one station to another to accommodate load on another station. I did earth fault and over-current coordination studies to ensure security, and stability of the network, while adding load such as Gautrain station to the network. I have done extensive work on the 765 kV breaker and a half project, which was done to ensure a reliable and more robust network. I have developed the 765 kV reactor template, using tools such as PCM 600 from ABB, and DigSilent Power factory for network modeling and fault studies as well as ABB manufacturer's manual. This template is to be used by all protection settings engineers for the purpose of settings calculation for all breaker and half reactors. I was also involved in the development of breaker and half 765 kV transformer scheme template. I have used this knowledge to develop a template for double busbar configuration transformer template for RET 670 relay (ABB microprocessor relay). The work done on these projects has required that I offer training to fellow protection engineers (from chief engineers to junior engineers and technicians) for better understanding of the relay functionalities. This required in depth knowledge of the relay configuration. I have developed documents, which in details discusses breaker and a half reactor protection philosophy and settings requirements for use by protection engineers.

01 September 2007 – 31 March 2009 Power System Protection Senior Engineer Eskom System Operations and Planning

Protection Settings Engineer

- Calculation of protection settings for Transmission and sub-transmission equipment, timeously, and of good quality.
- Engage with project managers for optimal work flow
- Offering support to National Control
- Engage in self development to keep abreast of latest development.

During this period I worked on expansion projects, where new equipments such as transformers and feeders were being installed, thus new protection schemes installed.

01 May 2006 – 31 August 2007 Technical Support Engineer Eskom Transmission-Central Grid

Technical Support Engineer

My responsibilities during this period included doing the following tasks;

- Compiling commissioning programs
- Commissioning of secondary plant equipment.
- Fault investigation.
- Responsible for closing off audit findings against secondary plant
- Refurbishment Project initiation and motivation for approval

01 March 2005 – 30 April 2006 Engineer in Training Eskom Transmission-Central Grid

Engineer in Training

During my training as an engineer, I went to different departments, learning their outputs, and how they fit into the organization. I did practical work, testing primary plant equipment, doing routine maintenance on circuit breakers, transformers, isolators (doing hot spot inspections), doing secondary plant maintenance with field technicians, and working on refurbishment projects from wiring of cables to relay testing. I also worked in protection design and application department, in substation security.

	January 2003 – December 2004 University of Cape Town **Msc in Engineering Degree, - The effects of wind turbines on power quality.** This thesis described an investigation into the power quality of wind turbines and the impacts this could have on distribution networks. The main focus was on voltage fluctuations and flicker as grid connected wind turbines could have an impact on these, especially when connected to weak distribution networks. The review of work done by others identified voltage fluctuation and voltage flicker as the main power quality characteristics that wind turbine could affect. The studies on voltage fluctuation and flicker were done by calculation, simulation on DigSilent, and measurements on a wind turbine installed at Klipheuwel wind farm near Cape Town. The voltage fluctuations were obtained by varying power output from the generator. The effects of X/R ratio of the grid on voltage variations were also studied. These were done to study the effects of the weakness of a distribution network. Measurements were done on a Vestas V47 wind turbine, which is of an induction generator type, with rated power output of 660 kW. Measured data included active, reactive and apparent power output, voltage and currents, as well as flicker emission. The above studies showed that wind turbines cause voltage fluctuation, which were related to wind speed. These studies also showed that wind turbines cause flicker during both switching operation and continuous operation. The above were shown by both calculations and measurements.
Skills	• Directorship • Leadership • Public Speaking • Strategic • Transformer design • Analytical • Advanced Network understanding and modelling using DigSilent Powerfactory • Tutoring and teaching skills • Report Writing and Presentation • Interpersonal skills • Decision making • Project management • Team player • Communication skills • Computer skills.
Education	1999 – 2002 University of Cape Town Cape Town Bsc (Engineering) Electrical Degree. Dean's Merit List (2001) 2003 – 2005 University of Cape Town Cape Town Msc Eng. 2011 University of South Africa Pretoria Certificate in Project Management
Future	

Plans	PhD research
Interests	Mentoring and Coaching Volunteering Women and Youth Empowerment Public Speaking Running Travelling

Reference:

1. Mr Sidwell Mtetwa
   Corporate Specialist
   Transformers and Reactors HV Plant Engineering
   Tel: 011 800 5546
   Cell: 082 560 2650
   Email 1: mtetwaNS@eskom.co.za
   Email 2: ngezwi.bytheword@gmail.com

2. Mr Paul Keller
   Chief Engineer
   Eskom System Operations and Planning
   Tel: 011 871 2013
   Cell: 084 505 8647
   Email 1: KellerPG@eskom.co.za
   Email 2: PAULKELLER@TELKOMSA.NET