

COLIN KING

ELECTRICAL ENGINEER

Education

Matriculated at CBC, Kimberley 1969

B.Sc (Engineering) (Electrical) (Witwatersrand) 1976

Management Development programme, UNISA, 1986

Professional affiliations

Pr Eng – Professional Engineer – Member 840254

Senior Member, South African Institute of Electrical Engineers, Member No 2367

Summary of Experience

Colin has worked in the electric power business for his entire career.

He has experience in the design and management of electrical protection for HV plant and power lines at Transmission level. He has experience in the preliminary and final design of substation projects at Transmission and Distribution level (400 kV to 11 kV). He has experience in the drafting of User Requirement Specifications for substation and power line projects.

For a number of Wind and solar projects, he supported the Hatch design team in the scoping of the Balance of Plant for the projects to connect the generation to the Eskom network, and in the preparation of the specification package. He reviewed and “signed off” on the design documents and drawings for the projects.

He was the project leader/engineer for a project to move three 57 MW gas turbines.

He lead the team that performed the preliminary design and specification for a 400/220 kV substation in Botswana. He acted as the project engineer for the client, Botswana Power Corporation, and witnessed the final testing and commissioning of the 400 kV and the 220 kV substation yards

He lead the team consisting of Eon Engineering staff and experts from Electricite de France that performed a reliability analysis of the 400 kV yard at a large power station.

He directed the team that performed initial project scoping and the preliminary design and drafted the tender documents and specification package for the Balance of Plant for a 67 MW Wind Farm.

He worked in Protection Design and Power Station Design, in general management and as an HV and Secondary Plant specialist. He has competency in power system simulation, having used the PSS/E, Digsilent and PSCAD packages.

He acted as the Project Engineer for a project which installed four 400 kV series capacitors. He drafted the specifications for the plant and adjudicated the bids and witnessed the final commissioning.

He has acted as project leader for the South African portion of the line and substation components of the Aries - Kokerboom 400 kV line (South Africa to Namibia).

He has been involved in the setting up and execution of the long term Refurbishment Plan for Eskom Transmission.

He was a part-time lecturer for a number of years to third and fourth year students in the Electrical Protection course and the Protection Technology course at the Cape Peninsula University of Technology.

RELEVANT EXPERIENCE

GC3 experience

Participated in a life extension inspection of the 1 000 V d.c busbars at an aluminium plant in Mocambique.

Performed on site acceptance testing of a 22 kV/300 V/300 V transformer for the Touwsrivier Concentrated Solar Plant in the Western Cape.

Hatch experience

Member of the team that drew up the specifications for Kariba and Hwange Transmission substation extensions. Participated in the contract negotiations for Hwange with the Chinese contractors. Witnessed commissioning at Kariba.

Member of team drafting the specifications for an 11 kV substation move at Mossel Bay.

Member of the team that evaluated the design requirements for an operational procedure change at Ma'aden Aluminium plant in Saudi Arabia. This included a site inspection and drafting a design proposal for the Clients approval.

Tender proposals for renewable projects in South Africa and for substation projects in Botswana and Zimbabwe – drafted the documentation package which included cost estimates

Two Gestamp solar parks - signed off as responsible engineer in terms of safety issues prior to switch on of the plants.

Signed off as responsible engineer for the design documents and drawings on Eskom connection portion of a number of renewable projects

Two Mainstream solar parks – Acted as project engineer, reviewed preliminary design specifications, reviewed the finals design drawings, attended project meetings and witnessed final commissioning (continuation from Eon experience)

EON experience

Two Mainstream solar parks – Acted as project engineer, reviewed preliminary design specifications, reviewed the finals design drawings, attended project meetings and witnessed final commissioning (continued in Hatch experience)

Hopefield Wind development (67 MW) - project lead for the development of the technical specifications for the 33 kV collector rings and the 132/33 kV substation primary and secondary plant as part of a bankable feasibility study.

Koeberg FMEA Project - project leader for the project which performed Failure Mode and Effects Analysis for the 400 kV yard at a 1 840 MW power station. The project analysed the

failure modes of all components in the HV yard. A reliability analysis was done on the models and recommendations were made to improve the reliability of the substation.

Ankerlig Re-location Project - project leader for the project that assessed the feasibility of moving three aero derivative gas turbines from Acacia Power Station to Ankerlig Power Station. A first pass design of the new power station was done. High accuracy estimates for the time and cost required for the project were developed and evaluated.

Isang 400 kV / 220 kV substation - project leader for the development of this substation. Specifications and enquiries were drawn up for the power plant inside the station, including three 315 MVA transformers and three 400 kV Shunt Reactors. He managed the implementation phase of the project with TAP (Trans Africa Projects).

MTPPP CoGen Projects - gave support to the project by providing an oversight function for the sub-projects and by giving technical assistance to the HV and secondary plant design and simulation work done by the project team.

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Eskom experience

HV Plant specialist - drew up the specifications for the Luckhoff 400 kV series capacitor banks, for the Bacchus, Proteus and Komsberg series capacitor banks, for the Iziko and Serumula series capacitor banks and for the 765 kV series capacitor banks.

Led the technical evaluation of the Bacchus, Proteus and Komsberg 1 and 2 series capacitor banks and of the Iziko and Serumula series capacitor banks

Acted as the project engineer for the Bacchus, Proteus and Komsberg 1 and 2 series capacitor banks during the Design Review, Installation and Commissioning stages.

Appointed as the Chief Mentor for the Transmission Services department in 2006.

General specialist - provided general technical support to the management of the newly formed Management team of the Transmission Cape area. Acted as the Protection, Telecommunications and Control Manager for about 12 months.

Acted as Transmission Manager for the Cape Area on a number of occasions.

Hydra 400/220/132 kV substation refurbishment – Project Engineer on the team that evaluated the need to refurbish the substation and drew up specifications.

Aries – Kokerboom 400 kV project (South African portion) - overall Project Lead for this project (a 400 kV power line, about 450 km long, and a 400 kV substation were built)

Managed the Eskom Engineering Department in the Eastern Cape (Initially 630 people, finally 250 people)

Responsible for the production of the Phase II protection schemes for lines and substation equipment. The responsibilities included the production of the designs and drawings, and the manufacture and prototype testing of the protection schemes.

Participant in the initial stages of the development of the design of the electrical systems of the Majuba Power station. The first stages included the drawing up of the philosophies behind the design processes for the power station.

Subsynchronous Resonance project - Performed the dynamic modeling studies for the large turbo generators and the Eskom network for the project under the guidance of a senior colleague. Involved in the tests that were done on the generators to establish the dynamic performance of the turbo-generators. Involved in the specification and acceptance testing of the relaying that was eventually bought (Westinghouse SSO relay)

Determined the settings for substation transformers and for 400 kV and 275 kV lines. This process included the use of the POWSYS steady state power system modelling package. Involved in fault investigations, as a junior team member.

Career History

July 2015 – present	Consulting to Hatch and GC3 Consulting
June 2015	Retired from Hatch
July 2011 – May 2015	Hatch Africa T&D, Cape Town. Principal Consultant
2008 – June 2011	Eon Engineering, Cape Town, South Africa. Chief Engineer
1991 - 2008	Eskom, South Africa, Cape Town. Senior Consultant
1987 – 1991	Eskom, South Africa, East London, Regional Engineering Manager
1977 – 1987	Eskom, South Africa, Johannesburg, Engineer-in-training/Engineer/Senior Engineer

Languages

English	(speak, read and write)
Afrikaans	(speak, read and write)