

Nic Marais, Pr. Eng., PhD.



Dr Nic Marais first completed a civil engineering undergraduate degree before specializing in nonlinear structural mechanics at post-graduate level.

He worked on marine and maritime structures from 1989 to 1992 while at Liebenberg & Stander Maritime and Industrial. He then took up an academic post at the University of Cape Town until 2002, becoming a Professor in Structural Engineering in the Engineering Faculty. Before joining Paterson & Cooke in 2006, Nic had his own consulting business which focussed on management and technology transfer, as well as providing specialist structural engineer services.

At Paterson & Cooke, Nic has participated in projects involving dune mining, dredging and slurry pipelines, as well as contributing to the company management.

Qualifications

1983, B.Sc Eng (Civil)
University of Cape Town.

1989, PhD
University of Cape Town.

2003/4, MBA
University of Cape Town.

Professional Status

Professional Engineer
(ECSA). Registration
number: 920108

Member of South African
Institute of Civil Engineers.

Specialization

Structural Mechanics –
nonlinear and transient
behaviour

Analysis and design of
slurry pumping systems

Notable Projects

Design of Sand Hopper Facility for Durban Beach Feeding System (2008, 09)

Preliminary design of new temporary storage and pump facility for the Durban Beach Feeding Scheme. Receive discharge from dredger, storage sand and discharge as slurry into existing pipeline system. Client: Transnet Port Authority.

Transient Models of Acid-leach Pipeline System, Chile (2008)

Numerical modelling of modifications to pipelines transport copper acid leach to ponds and leach pads as input for structural analysis and design. Client: Codelco.

Large Diameter Tailings Pipeline, Alaska, USA (2008)

Preliminary analysis and design of a large diameter tailings pipeline for Pebble Project with particular reference to accommodating thermal expansion of the pipeline, and determining suitable couplings and support/anchor structures.

Pre-feasibility Study on Paste Disposal Pipeline Options, South Africa (2008)

High level design and costing of paste thickener. Pumps and pipelines required for alternative locations of tailing storage facilities for a diamond mine. (Finch/Golder).

Basic Design for Dune Mining, South Africa (2008, 09)

Development of a general costing analysis and basic design tool for pipeline systems for ROM, sand and residue tailings, return water, co-disposal and heavy mineral concentrate systems. Port Durnford and Hillendale studies for Exarro.

Dewatering Bins on the MV Peace in Africa, South Africa (2007, 2008)

The detail design of the lateral support frames and caps for the dewatering bins on this vessel. Follow-up work included concept and detailed design of alternatives for handling excessive froth from operations. Client: De Beers Marine.

Basic Design of PLS and Raffinate Pipelines, Iran (2007)

Basic engineering design and costing of two 7 km pipeline systems to pump pregnant leach solution from the heap leach pads at the mine site to the processing plant over mountainous terrain, and return raffinate solution to the mine. Client: NICOCO - Darehzare Copper Leach Project,

Other Major Projects:

- Upgrade of raw water system, Jwaneng Mine, Botswana (2007-2009)
- Transient Analyses of Process Water System, BKM Mine, South Africa (2007)
- Corridor Sands, 60 km Ilmenite Pipeline, Basic Design, Mozambique (2007)
- Design and Analysis of Pipeline Support and Ancillary Structures (2007-2009)