



DELAREYVILLE PROCESS CONTROLLER

WATER AND ENERGY SECTOR SUPPORT

ENGINEERING PERSPECTIVE

The water and energy sectors in South Africa are faced by challenges beyond the scope of classical engineering. Virtual Consulting Engineers adopts an interdisciplinary approach to solve water and energy supply problems in the public sector in particular. Our team aims to support Local Government and Water Boards, and owners of large buildings, by drawing inspiration from diverse skills in the fields of corporate governance, administration of water law, labour related issues, social facilitation, education and training, environmental sciences, microbiology, health sciences, water chemistry and engineering.

PROFESSIONAL SERVICES

Through collaboration of its in-house specialists and network of partners, Virtual Consulting Engineers offers the following services to Water and Energy utility organisations:

- Water Use License Audits and Process Audits
- Plant optimisation for improved capacity and energy demand
- Maintenance management and professional process control
- Process controller training and workplace skills development
- Blue Drop, Green Drop and No Drop system administration
- Water use efficiency and energy performance certification for buildings
- Green Energy strategy development
- Applied research projects

We have built up a library with water quality data, typical energy uses, plant information, scholarly articles and textbooks, as well as innovative contract documentation for the implementation of operation and maintenance and facilities management contracts.



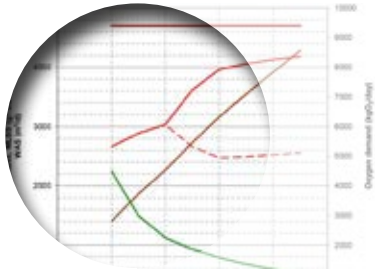
PROJECTS



Separate collection and treatment of urine / Anammox in the old Daspoort trickling filters (2010 – 2014)

Water Research Commission / CSIR

Characterization of domestic wastewater at the source by retrofitting no-mix toilets and waterless urinals to divert and analyse urine, faeces and greywater, with treatment of separate waste streams (Published by Water Research Commission as TT 586/13). Followed by investigation into extraordinary removal of nitrogen at the Daspoort trickling filters (1913), that resulted in the discovery of Anaerobic Ammonium Oxidation bacteria (Anammox) for the first time in Africa (Published in Water SA, Vol 40 - 1).



Hydraulic and Organic Regrading of Works (2015 - 2017)

Ekurhuleni Water Care Company

Wastewater was characterized with a special sampling campaign, for regrading of hydraulic and organic loads, with steady state models and dynamic simulation for treatment plants at Carl Grundlingh (5.5Mℓ/d), JP Marais (15Mℓ/d), Jan Smuts (4.5Mℓ/d), Rynfield (10Mℓ/d) and Vlakplaats (hydraulic 335Mℓ/d, organic 55Mℓ/d). New Operation and Maintenance Manuals were developed.



Water Safety and Risk Abatement Planning (2015 – 2024)

Lekwa, Dr Pixley Ka Isaka Seme, Bergrivier and Prince Albert Local Municipalities

VCE developed process flow diagrams, process audits, Water safety plans (WaSPs), Wastewater Risk Abatement Plans (W₂RAPs), Incident Management Protocols, and Sampling programs for various Municipalities. Our Lead Assessors are part of the ongoing Blue Drop, Green Drop and No Drop programmes as professional services providers for the DWS.



Water Stewardship Strategy for Venetia (2024)

Anglo American / De Beers

Anglo American selected Venetia Mine as a pilot for the development of a Water Stewardship Strategy, to address business risks in a coordinated approach. Our team defined catchment specific water challenges, and ideal projects, in relation to the UN Sustainable Development Goals, which would address community water issues within Venetia's zone of influence.



Cholera investigation in Hammanskraal and the Apies River (2023)

Water Research Commission

Following the outbreak of cholera in Hammanskraal (2023), the WRC appointed VCE for environmental monitoring and water infrastructure assessment from Rooiwal to Temba. Our team concluded that "Cholera walked into town, and swam out." and the hype around cholera was misplaced. The investigation pointed to neglect of infrastructure, and the area remains at risk of any water borne disease epidemic.



Green Energy / Water Demand Management Strategy (2022)

South African National Biodiversity Institute

VCE inspected all 14 of SANBI's campuses across South Africa, to gather information as baseline for the development of its Green Energy and Water Conservation Strategy. This resulted in plans for baseline consumption trends, energy and water reduction, improved energy and water efficiency, greater energy and water independence, monitoring and evaluation, soft policies aligned with the strategy and new funding models.