



Pat Naidoo Consulting Engineers

Inc RSA CC 2009/211947/23

www.patnaidoo.co.za

Expertise Profile

Electrical Engineering

The experience portfolio covers the full spectrum of Power Generation, Power Transmission extending from Extra and Ultra High Voltage AC and DC Electrical Technology to Flexible AC Transmission Systems, Power Delivery extending from Urban Distribution and Reticulation Power Delivery to Rural Electrification and Single Wire Earth Return Systems.

For each portfolio, the details will include Planning, Engineering Design, Operations, Maintenance, Protection, Control, Metering, Refurbishment, Decommissioning and Electrical Safety.

Special projects under review include small to medium scale conventional thermal power and industrial steam generation using waste, small to large scale conventional hydro electric run of river power generation and new developments in small scale renewable energy wind and solar power cogeneration for domestic, commercial, agricultural and small industry applications.

Projects on tender include the following responses:

- ✚ Major City Urban Distribution System Upgrade
- ✚ New High Voltage Power Transmission Development for a National State Utility
- ✚ 70 MW Municipal Waste to Energy Power Plant
- ✚ 20 MW Municipal Waste to Energy Power Plant
- ✚ Technical Capacity Development for Geothermal Power Generation

Electrical Energy

The experience portfolio covers the subject from power systems economics to energy management. Key focus areas include energy savings, energy efficiency strategies, energy trading, energy exchange and energy banking. New developments include renewable energy applications for both co-generation and off grid applications.

An old favourite is quality of supply; identification of causes of quality degradation and recommended mitigation strategies. The subject covers both voltage and frequency quality. Areas of extensive working experience covers:

- ✚ Electrical fault caused voltage depressions
- ✚ Voltage Notching due to power electronic switching
- ✚ Voltage Dips due to starting of large loads
- ✚ Voltage Unbalance due to large single phase loads
- ✚ Voltage Harmonics

Electrical Markets and Models is an area of further study that includes monopoly, competitive and co-operative experiences. The study is extended to cover international experiences in Electricity Regulation and Regulatory practices.

Projects on tender include the following responses:

- ✚ National Ministry of Energy for Energy Efficiency Measurement and Monitoring
- ✚ Smart Metering for a small re-distributor
- ✚ Smart Metering Technology for a major metro and re-distributor

Engineering Project Development

The experience portfolio extends from concept to commissioning; including major chapters in project financing. Specifically, the work involves the following steps in project development:

- ✚ Idea Development
- ✚ Concept Scoping
- ✚ Pre Feasibility Study
- ✚ Feasibility Study
- ✚ Socio Economic Impact Assessment
- ✚ Environmental Impact Assessment
- ✚ Pre Engineering Design Planning and Design Studies
- ✚ Customer Agreements
- ✚ Project Financing
- ✚ Benchmarking Studies
- ✚ Asset Utilization Studies
- ✚ Best Practices Review
- ✚ Legal Due Diligence Review
- ✚ Contractual Agreements
- ✚ Business Planning
- ✚ Financial Planning – Projected Income Statement, Cash Flows and Balance Sheet
- ✚ Strategy Making
- ✚ Competitive Analysis
- ✚ Project Governance
- ✚ Financial Closure

Two large scale projects are under development.

These are a rapid rail system for a major port city in Africa and a new ultra high voltage AC and DC laboratory for high altitude, high voltage research and investigations at a leading South African University.

Engineering Business Management

Leading and managing large engineering projects and businesses requires appropriate skills. The experience to date includes:

- ✚ Leadership for Business Results
- ✚ Customer Engagement and Relationship Making
- ✚ Business Management and Output Contracting
- ✚ Performance Monitoring
- ✚ Performance Management
- ✚ Performance Enhancement
- ✚ Failure Analysis
- ✚ People Development
- ✚ Professional Engineer Mentorship
- ✚ Leadership Coaching
- ✚ Management Development
- ✚ Tutorials, Lectures and Conferences
- ✚ Safety Management

For projects and industry, safe working is not negotiable and ZERO ACCIDENT is always an expected business result. This result has been achieved and must be delivered by all from management to employees to contractors.

Customers are totally dependent on electrical energy and business results such as 100% availability, day after day, is an expectation. This is achievable and it will involve investments in both people and technology.

Affordable electrical energy is a public good and every effort must be engineered to achieve a lower cost outcome for all customers.