

# EKAGENG

## SOLAR & ELECTRICAL

Turnkey Electrical Projects  
Engineering & Management Company



# COMPANY PROFILE

Prepared By  
**Ekageng Solar & Electrical**

10 Johannes Street,  
Kilner Park, Pretoria, 0186

[www.ekagengprojects.co.za](http://www.ekagengprojects.co.za)

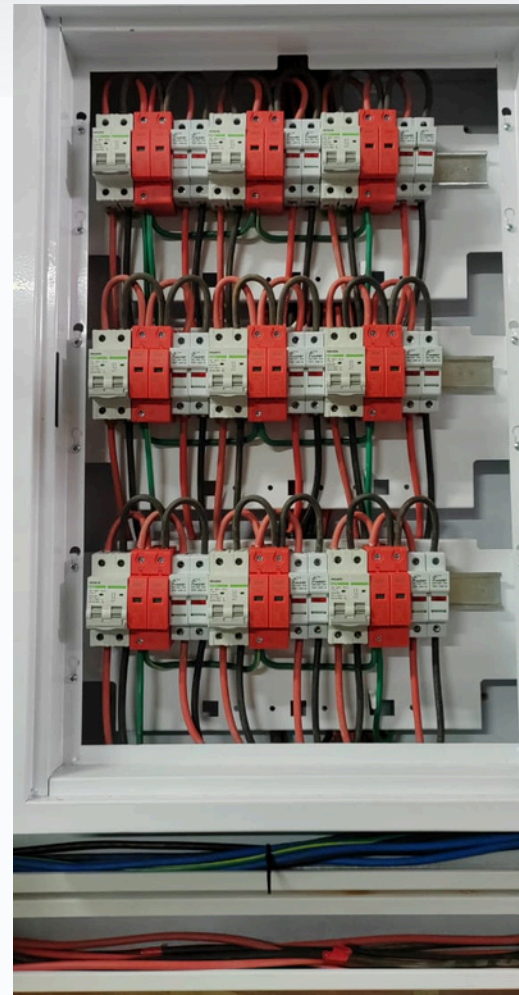


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## BUSINESS INFORMATION



### Contact Hub

#### Location:

10 Johannes Street, Kilner Park, Pretoria, 0186

#### Email Correspondence:

[albert@ekagengprojects.co.za](mailto:albert@ekagengprojects.co.za)

[braam@ekagengprojects.co.za](mailto:braam@ekagengprojects.co.za)

#### Directors Direct Lines:

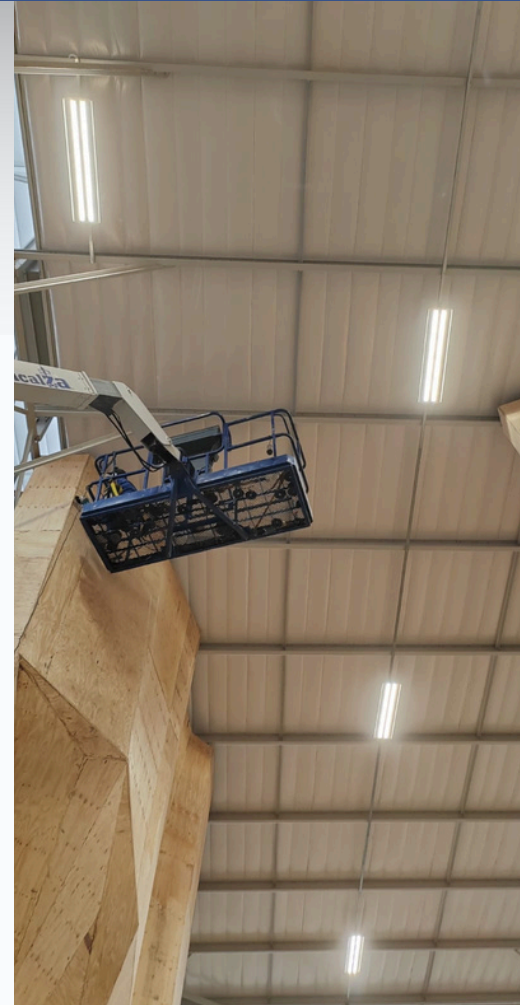
**Albert van Jaarsveld:** 072-212-4914

**Braam van Jaarsveld:** 082-587-4205

[www.ekagengprojects.co.za](http://www.ekagengprojects.co.za)



## BUSINESS INFORMATION



At **Ekageng Solar & Electrical**, we are more than just a name in the electrical contracting realm; we are a beacon of excellence and reliability. We stand at the forefront of power optimization - specializing in power factor correction, harmonic filtering, and pioneering energy-saving solutions that redefine efficiency.

Our foundation is solidified by over 25 years of collective experience in the electrical field, steering pivotal industrial, commercial, and residential projects to success. Our directors are not only seasoned experts but also trusted allies in the construction and energy sectors, recognized for their acumen by consultants and builders alike.

In essence, we are not just builders of structures, but architects of progress, ensuring every watt of power is utilized to its fullest potential. Let's electrify the future together - responsibly, sustainably, **Ekageng Solar & Electrical.**

## BUSINESS VISION

### Discover Ekageng Solar & Electrical: Illuminating Excellence.

#### Our Intent

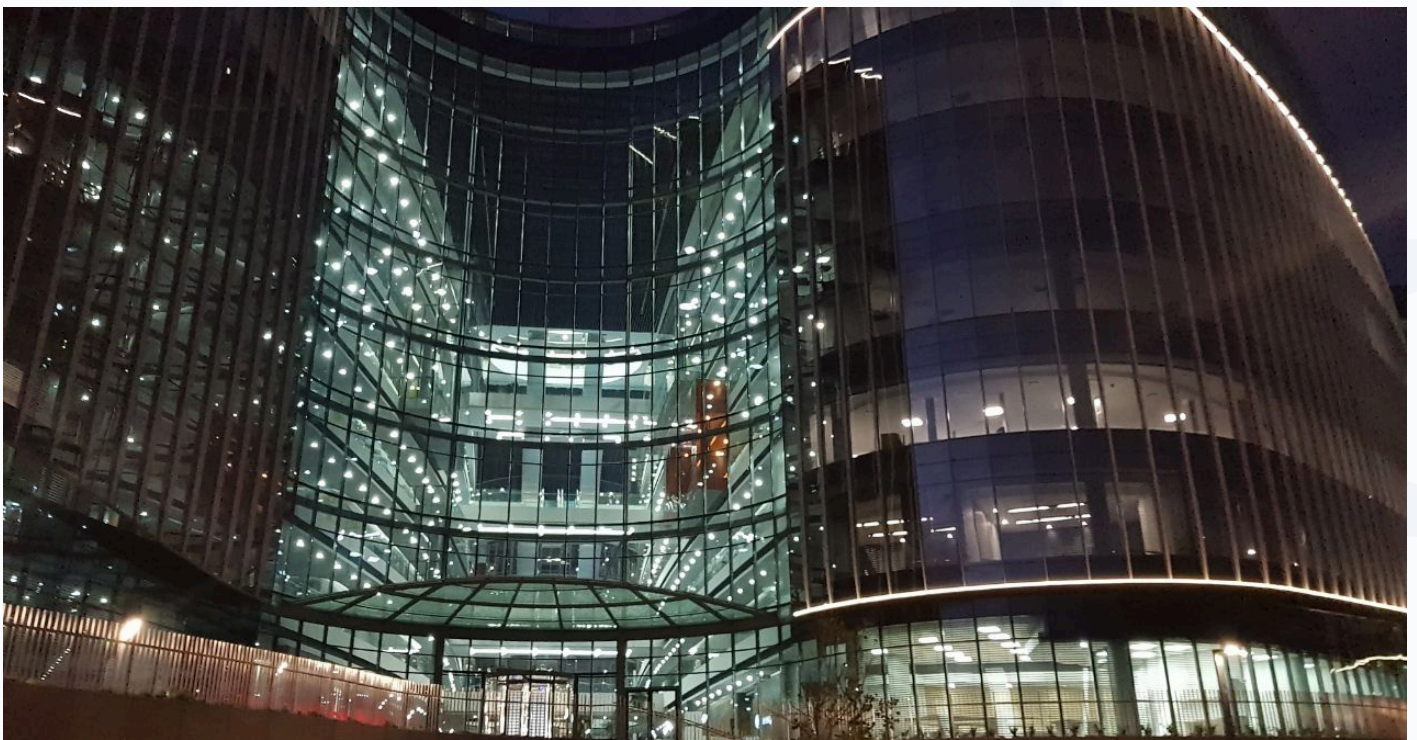
Our journey is fueled by one core aspiration: to be the vanguard of power quality and energy efficiency. At **Ekageng Solar & Electrical**, we commit to not just meeting, but surpassing your service expectations, forging partnerships that spark profitability and a sustainable future.

#### Our Vision

We envision a world where our solutions illuminate every corner of the industry, surpassing the anticipations of our valued clientele. Quality, for us, isn't just a metric; it's a promise.

#### Our Mission

Our path is paved with the goal of cementing enduring bonds with those we serve - from our patrons to our partners. We're not just offering services; we're engineering legacies with innovation and the latest technological advancements.



## BUSINESS VISION



### **Our Ethos**

Our values are the bedrock of our enterprise. We cultivate respect and faith in every interaction, fostering growth through creative solutions and pioneering thought. Integrity and ethical practice are the lifeblood that sustains our business's heartbeat.

### **Our Ambition**

We are on an unwavering quest to broaden our horizons in power factor correction, harmonic filtering, and energy-saving solutions. Our aim is to cultivate a robust network of clients who regard us not only as a service provider but as a leader in power quality and conservation. It's not just about reducing costs; it's about amplifying efficiency and ensuring the delivery of optimal electrical supply without the burden of excess, in compliance with the strictest standards and regulations.

*Together, let's energize the path to a brighter, more efficient tomorrow.*

## EXECUTIVE PORTFOLIO

### Distinguished Projects Spearheaded by Our Leadership

Our directors have channelled their expertise into a variety of significant projects, showcasing our adaptability and breadth of knowledge in the electrical industry. Here's a glance at some of the landmarks in our journey:

Project Title	Locale
Discovery Head Office	Sandton
Anslow Office Park	Bryanston
Knights Bridge Office Park	Bryanston
Kathu Resettlement	Kathu
Kuruman Mall	Kuruman
Discovery Data Centre	Sandton

Our collective wisdom in the field is vast, with a comprehensive understanding of every nuance in the electrical landscape.



## EXECUTIVE PORTFOLIO



### Clientele in Power Management

Novasun  
Silverstream Office Park  
Mozambique Banana Farms  
Swaziland Sugar Mills  
Mall of the South  
Kentz  
Jacaranda  
Fujitsu  
Shakespeare Inn  
The Houghton Hotel  
ABSA Bank - George  
ABSA Bank - Queenstown

Zen Prop  
Pick 'n Pay Panorama  
Pretoria Eye Institute  
Woodcentre  
Magnis  
Gernic  
WSP  
Sasol  
Grand Central Airport  
SA Distillery  
ABSA Bank - Oudtshoorn

Each engagement has fortified our resolve to be at the vanguard of power factor correction, generator management, and data logging solutions. Our experience is as diverse as it is profound, ensuring every client enjoys a future-proof and resilient electrical infrastructure.



## RECENT PROJECTS

### RESIDENTIAL AND COMMERCIAL SOLAR INSTALLS

**5 kW** INSTALLS

**8 kW** INSTALLS

**12 kW** 3-Phase INSTALLS

**16 kW** INSTALLS

**50 kW** INSTALLS

**300 kW** INSTALLS

### CONSTRUCTION/ REFURBISHMENT/ ELECTRICAL INSTALLS

**PRETORIA HIGH COURT** (HVAC, plant electrical and BMS)

**PALACE OF JUSTICE** (electrical for access control and courtrooms)

### CONSTRUCTION SUB CONTRACTS

**SABLE LABS** (upgrade main connection and DB's)

**GUERNSEY WAREHOUSE** (new development, all electrical installations)

**OLIVES GATE RESIDENTIAL** (new development, all electrical installations)

**AGSA** (office tenant electrical install)

**MAMS MALL** (electrical shop fitting)

**SASOL MOZAMBIQUE** (data analysis, power factor and harmonic filtering)

**SUNNY PACKS** (new development, all electrical installations)

### POWERFACTOR, DATA LOGGING AND GENERATOR CLIENTS

Life Hospital Rustenburg

Church of Scientology

Christ Church Midrand

Cisco Thermal

Country Bird

Famous Brands

Kings Hire

Merc Thermal

Pitsana Mills

Taemane Estate

Laduma Nursery

Menlyn Maine

New Road

Speck Pumps

Middle Auditors

Easy Glass

Builders Warehouse

BP Elgin

Angstrom

Alette Rusks

## LOG ANALYTICS

### Essentiality of Energy Log Analytics

In the realm of electrical management, the criticality of precise energy logging stands paramount. Through meticulous logging practices, we establish a fundamental baseline, reflecting the actual energy utilization – in kilowatt-hours (kWh) and kilovolt-amperes (kVA) – which often reveals more than what is recorded by conventional supply authorities.

We encourage the initiation of the logging process at the earliest opportunity, enabling us to analyse and provide insightful feedback post-analysis. This process offers a granular view of your establishment's energy footprint, allowing for a comprehensive assessment and comparison with official supply benchmarks. Our detailed logging captures daily metrics, including consumption, voltage, current, harmonics, and power demand, among others. This data paints a vivid picture of your supply's power landscape.

Utilizing the data harvested, we chart a strategic course to enhance energy efficiency and capitalize on conservation opportunities. Our insights pave the way for tangible improvements in every facet where potential is identified. To this end, we employ the state-of-the-art C.O.R.3 Quality of Supply Logger. This advanced tool is deployed to meticulously log data from the site's transformers, enabling us to craft an informed strategy for aligning your project with its energy efficiency goals and contractual obligations, ultimately bolstering site efficiency and reducing electrical expenditure.

### Our loggers are adept at gauging an extensive array of parameters:

Phase Voltage	Reactive Energy
Line Voltage	Power Factors ( <i>Active &amp; Reactive</i> )
Neutral Current	Energy Consumption Patterns
Current ( <i>Calculated</i> )	Demand Peaks ( <i>Active &amp; Apparent</i> )
Frequency	Harmonic Profiles ( <i>Voltage &amp; Current</i> )
Active Power	Total Harmonic Distortion ( <i>Voltage &amp; Current</i> )
Reactive Power ( <i>Inductive &amp; Capacitive</i> )	Voltage Fundamentals
Apparent Power	Current Fundamentals
Active Energy	Voltage Fluctuations ( <i>Short &amp; Long Term</i> )

Each parameter meticulously monitored is integral to tailoring a solution that is uniquely suited to each client's specific needs.

# SANS REGULATIONS

## Guidance on Compliance with SANS Regulations

In adherence to Eskom's NRS 048 Part 2 document, we provide our customers with a comprehensive overview to ensure compliance with the defined electrical standards. These guidelines align with the quality management regulations mandated by NERSA and are encapsulated in Eskom's NRS 048 Part 4, under the standard ESK-S-ANG.

## Synopsis of Acceptable Disturbance Levels for Customer Facilities

Our compliance matrix, as detailed below, outlines the permissible levels of electrical disturbances for various supply voltages as per Eskom's regulations:

### Compliance Matrix: Disturbance Thresholds

Disturbance Factor	High Voltage (HV)	Medium Voltage (MV) / Low Voltage (LV)
Power Factor	-	> 0.95 ( <i>non-leading</i> )
Voltage Unbalance	<b>See Note 1</b>	≤ 3.5% ( <i>for three-phase supply</i> )
Flicker (Pst)	<b>See Note 1</b>	≤ 0.35
Harmonics (THD)	<i>See Note 1</i>	≤ 1%
<b>Rapid Voltage Changes (Magnitude %)</b>		
- r.m.s changes/hour	≤ 3	≤ 4
- 1s < r < 10s	≤ 15	≤ 2
- 10s < r < 100s	≤ 2.5	≤ 3
- 100s < r < 1000s	≤ 1.25	≤ 1.25

**Note 1:** Custom assessments are conducted at each unique customer supply point to establish these specific values.



## SANS REGULATIONS

### **Standards for Low Voltage (LV) Equipment Disturbances:**

LV equipment interfacing with the public electrical system must comply with the following SANS standards to mitigate disturbances:

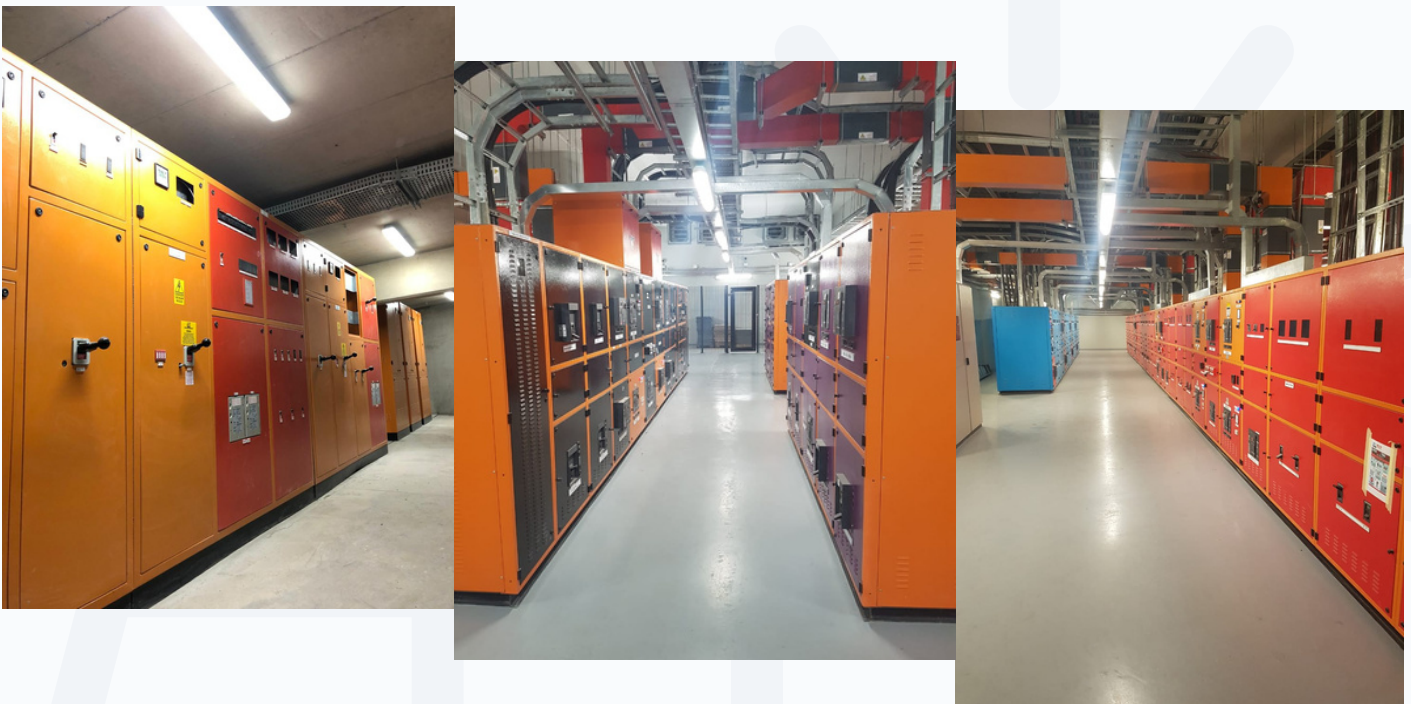
Harmonics for LV equipment under 16A as per SANS 61000-3-2

Flicker for LV equipment under 16A as per SANS 61000-3-3

Harmonics for LV equipment over 16A as per SANS 61000-3-11

Flicker for LV equipment over 16A as per SANS 61000-3-12

These standards are pivotal to maintaining the integrity and stability of the power grid, ensuring that all equipment operates within the bounds of established electrical norms for the safety and efficiency of the energy supply.



## TYPE OF DATA LOGGER

### Selecting the Premier Data Logging Equipment

When it comes to monitoring and managing power systems, the choice of data logger is critical. Our preferred equipment is the Supply Logger, crafted with precision in Europe, bearing technical certifications that unequivocally rank it among the elite in measurement devices. Through rigorous use in our bespoke client solutions, this equipment has consistently validated its efficacy in meeting and surpassing the objectives set for each unique site.

We utilize the **Circutor Auditor**, a renowned name in data logging, produced in Spain. This device not only meets but exceeds the European Commission's standards, aligning with directives 2004/108/EC, 2006/95/EC, and 2009/125/EC, ensuring full compliance and reliability.

Recognized globally across continents from Europe to Asia, and Africa to America, these Energy Auditors are celebrated as the industry benchmark. Their deployment across a myriad of applications has solidified their reputation as the foremost choice for energy professionals.

**CIRCUTOR**

**CIR-e<sup>3</sup>**



## TYPE OF DATA LOGGER

Our commitment to efficiency is mirrored in our rapid turnaround time. Following a comprehensive energy audit, we pledge to manufacture and integrate the appropriate Low Voltage (LV) systems within a four-week period, ensuring minimal disruption to your operations. The impact of our swift integration is immediate, with cost savings becoming apparent, prompting a swift return on investment almost immediately after implementation.

Clients have consistently acknowledged the value of early logging interventions, recognizing the importance of capturing critical data from each transformer. This foundational step is crucial in designing optimal LV systems that not only meet but exceed performance expectations. Rest assured, with Ekageng Solar & Electrical, your energy management is in the hands of seasoned professionals dedicated to delivering excellence with every watt accounted for.



## THE EFFECTS OF HARMONICS ON POWER SYSTEMS

### Demystifying Power Factor Correction

#### Understanding Power Factor

At its core, Power Factor signifies the efficiency with which your electrical system utilizes incoming power. It's expressed as a ratio of Real Power (the power that actually does the work) to Apparent Power (the total power supplied to the system).

**Real Power (KW):** This is the muscle behind your electrical system, driving your equipment and facilitating productive tasks.

**Reactive Power (KVAR):** Necessary for certain equipment like transformers and motors, Reactive Power supports operational functions without contributing to productive work.

**Apparent Power (KVA):** A composite of Real and Reactive Power, this is the total power your system draws to achieve its Real Power output.

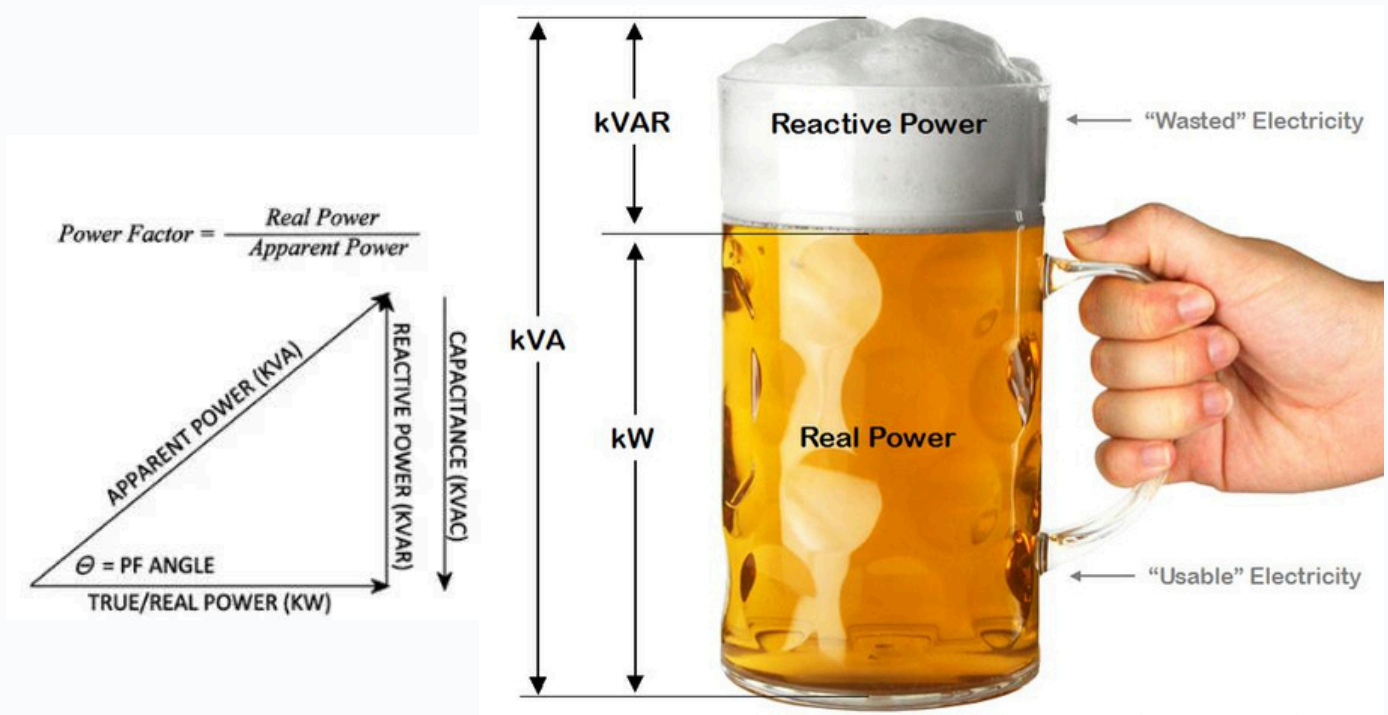
The formula for Power Factor is a simple yet powerful indicator of your electrical system's efficiency:

Power Factor = KW (Real Power) / KVA (Apparent Power)

#### How Power Factor Correction Optimizes Efficiency

Power Factor Correction (PFC) is a strategy to enhance the efficiency of an electrical system, aiming to bring the Power Factor closer to 1 (unity). A Power Factor of 1 indicates that all the power supplied to the system is being used effectively for productive work, minimizing waste and improving the overall energy efficiency.

## HOW DOES POWER FACTOR CORRECTION WORK?



PFC involves the use of capacitors or inductors to balance the Reactive Power in the system. This adjustment reduces the total amount of power drawn from the supply, decreasing energy waste and potentially lowering electricity costs. By optimizing the Power Factor, PFC helps in:

- Reducing the demand charges on your electricity bill.
- Increasing the capacity of your existing electrical infrastructure, thus avoiding costly upgrades.
- Improving the voltage at the equipment terminals, enhancing the performance and lifespan of your electrical assets.

In essence, Power Factor Correction is an essential component in the management and optimization of your electrical system, ensuring that every watt of power is utilized to its fullest potential, thereby supporting sustainability and cost-effectiveness in operations.



## HOW DOES POWER FACTOR CORRECTION WORK?

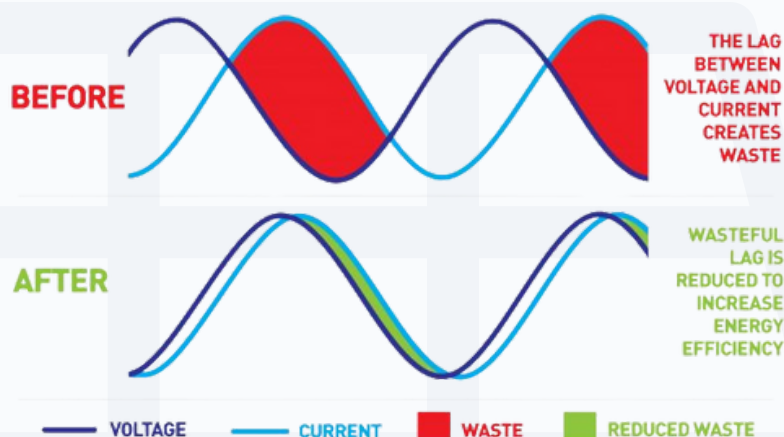
### Implementing Power Factor Correction for Enhanced System Efficiency

When an electrical system operates with a Power Factor below 90% (0.9), it's an indicator that Power Factor Correction (PFC) may be necessary. Operating under such conditions can lead to a host of challenges, including equipment instability, potential failures, and elevated energy costs. This inefficiency stems from the system requiring more current than is ideally necessary to perform its intended tasks.

The essence of PFC lies in its ability to refine and boost the power factor, leading to an enhancement in power quality. This, in turn, alleviates the burden on the electricity distribution network, contributing to a more stable and efficient power supply.

PFC is achieved through the strategic deployment of capacitor banks. These capacitors work to counterbalance inductive loads (notably, where reactors are utilized to manage capacitive loads), effectively reducing the overall electrical demand of the system. This adjustment not only optimizes energy consumption but also contributes to the sustainability of the electrical infrastructure by ensuring that power is utilized in the most efficient manner possible.

By integrating PFC measures, businesses and facilities can anticipate a marked improvement in their electrical systems' performance, resulting in reduced operational costs and a more reliable power supply.



## GENERATOR

### Securing Business Continuity with Generator Solutions

In today's business landscape, the impact of power outages and load shedding can be profound, disrupting operations and leading to significant financial losses. Recognizing the critical need for an uninterrupted power supply, we provide comprehensive generator solutions tailored to safeguard your business against such challenges.

Our commitment extends beyond merely addressing power interruptions; we aim to ensure that your business remains operational and resilient, regardless of power fluctuations. With a deep understanding of the unique power generation needs across various sectors, we offer specialized consultation, installation, and maintenance services for industrial, commercial, and residential setups.

Our portfolio features a diverse range of high-quality generators from leading manufacturers, including Volvo, Perkins, YTO, Cummins, Lovol, FAW, and Honda. Catering to different requirements and preferences, our offerings encompass both open set and silent generators. Additionally, we provide options with automatic changeover systems, ensuring seamless transition during power outages.

Embrace the peace of mind that comes with a reliable power backup solution. Let us empower your business continuity with our expert generator services.



## SOLAR POWER

### Empowering Your Business with Solar Energy Solutions

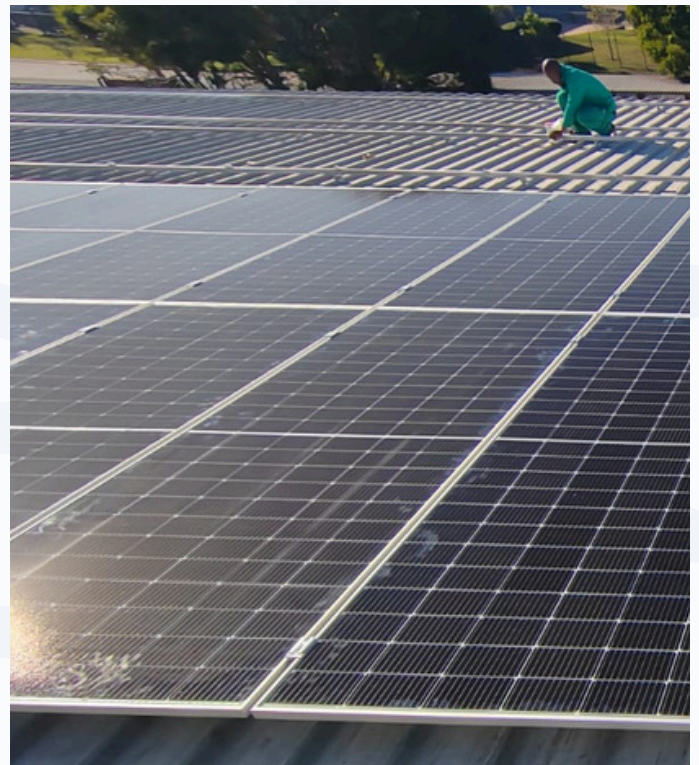
Introduction In today's energy-conscious world, businesses are increasingly turning to solar power to meet their energy needs sustainably and cost-effectively. Ekageng Solar & Electrical stands at the forefront of this transition, offering expert solar power solutions tailored to the unique requirements of each business.

#### The Need for Solar Energy in Business

**Reliability and Independence:** Combat the challenges of load shedding and power outages that disrupt operations and impact the bottom line.

**Sustainability:** Align your business operations with environmental sustainability goals by reducing carbon footprint.

**Cost Savings:** Significantly reduce energy bills over time through the utilization of solar energy, a free and abundant resource.



## SOLAR POWER



### Ekageng's Solar Power Solutions

**Custom Solar Power Systems:** Design and installation of bespoke solar power solutions that cater specifically to your business's energy consumption patterns and physical infrastructure.

**Comprehensive Energy Analysis:** Utilize cutting-edge technology to analyse your current energy usage and identify the most effective solar power solutions for your needs.

**Turnkey Project Management:** From initial consultation through installation and maintenance, Ekageng manages every aspect of your solar power project, ensuring a seamless transition to solar energy.

**State-of-the-Art Technology:** Partnering with leading solar technology providers to offer efficient and reliable solar power systems, including solar panels, inverters, and battery storage solutions.

**Ongoing Support and Maintenance:** Dedicated post-installation support to ensure your solar power system continues to operate at peak efficiency, including regular maintenance and system monitoring.

## RETURN ON INVESTMENT

### **Maximizing Your Return on Investment with Ekageng Solar & Electrical**

At Ekageng Solar & Electrical, we understand that the decision to invest in solar power is not just an environmental choice, but a significant financial commitment. That's why we prioritize ensuring that our clients achieve the most favourable Return on Investment (ROI) possible. Our approach is rooted in delivering high-quality, cost-effective solar energy solutions designed to reduce operational costs and enhance profitability over the long term.

#### **Strategic Cost Management for Optimal ROI**

**Competitive Pricing:** We leverage our extensive network of suppliers and partners to ensure that the costs of solar panels, inverters, and installation are kept competitive without compromising on quality.

**Tailored Solutions:** By designing solar power systems that are precisely tailored to your business's energy needs and consumption patterns, we maximize efficiency and ensure that you're not overpaying for unnecessary capacity.

**Energy Efficiency First:** Our holistic approach starts with an energy efficiency audit to reduce your overall energy demand before sizing your solar system. This step ensures you invest in only what you need, further optimizing your ROI.

## RETURN ON INVESTMENT

### Accelerating ROI Through Expertise and Innovation

**Advanced Technology:** Utilizing the latest in solar technology not only provides more efficient energy production but also ensures longevity and reliability, reducing maintenance costs and increasing the lifespan of your investment.

**Government Incentives and Rebates:** We guide our clients through the process of identifying and applying for available government incentives, tax rebates, and grants that can significantly reduce the upfront cost of solar installations.

**Energy Savings:** From day one, our solar solutions begin to offset your current energy costs, providing immediate savings on utility bills. Over time, these savings contribute significantly to a quick ROI, often within just a few years of installation.

### A Partnership for Sustainable Success

Choosing Ekageng Solar & Electrical means more than just installing solar panels; it's about entering into a partnership aimed at achieving sustainable business success. We stand by our clients throughout the lifecycle of their solar power system, from the initial consultation and beyond, ensuring that your investment continues to deliver optimal returns.

**Monitoring and Optimization:** Our ongoing system monitoring and optimization services ensure that your solar power system performs at its best, adjusting to changing conditions and technological advancements.

**Transparent Reporting:** We provide detailed reporting on energy production and savings, allowing you to see the tangible benefits of your investment.

## RETURN ON INVESTMENT

### Commitment to Your Business's Future

Investing in solar power with Ekageng Solar & Electrical is an investment in the future of your business. We are committed to helping you achieve a rapid ROI while contributing to a more sustainable and profitable operational model. Let us show you how your investment in solar energy can pay dividends for years to come.

By entrusting your solar energy needs to Ekageng Solar & Electrical, you're choosing a path to a quicker, more impactful return on investment. Our dedication to your success is mirrored in every solar solution we provide, tailored for maximum efficiency, sustainability, and profitability.



## WHY CHOOSE EKAGENG?

### **Ekageng Solar & Electrical: Expert Solar & Electrical Contractors**

#### **Illuminating Futures, Empowering Sustainability**

At Ekageng Solar & Electrical, we're not just lighting the way to electrical innovation; we're powering the journey towards a sustainable future. As your dedicated electrical contractors, we offer a comprehensive suite of construction and maintenance services, meticulously designed to enhance your power infrastructure's efficiency, reliability, and environmental sustainability.

**Power Factor Correction:** Optimize your electrical system's efficiency, significantly reducing operational costs and enhancing system reliability.

**Harmonic Filtering:** Safeguard your equipment and minimize energy losses through our sophisticated harmonic filtering technologies.

**Energy Saving Solutions:** Leverage the latest in energy conservation technologies and strategies to drastically cut energy usage and expenses.

**Generators:** Guarantee continuous power with our dependable, high-performance generator solutions, customized for your specific requirements.

**Metering Solutions:** Achieve detailed insights and management over your energy consumption for superior efficiency and savings.

**Solar Power Solutions:** Harness the sun's endless energy with our bespoke solar power systems, designed for maximum energy generation and minimal environmental impact.

#### **Why Partner with Ekageng Solar & Electrical?**

Choosing Ekageng Solar & Electrical means more than securing top-tier electrical services; it signifies a commitment to building a more efficient and sustainable operational future. Our dedication to quality, innovation, and customer satisfaction compels us to deliver solutions that not only fulfil but surpass your expectations. With us, you're not just investing in today's solutions; you're empowering your tomorrow with efficiency, reliability, and sustainability.



## **“Build Yourself” with Ekageng Solar & Electrical**

Step into a world where energy efficiency meets sustainability.

Let's collaborate to transform your electrical and energy landscape into a model of efficiency and environmental stewardship.

**Explore Online: [www.ekagengprojects.co.za](http://www.ekagengprojects.co.za)**

**THANK  
YOU**

**Reach Out Today:**  
[albert@ekagengprojects.co.za](mailto:albert@ekagengprojects.co.za)  
[braam@ekagengprojects.co.za](mailto:braam@ekagengprojects.co.za)

**Direct Lines:**  
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**Braam:** 082-587-4205

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