CASE STUDIES

Alpha Power Solutions

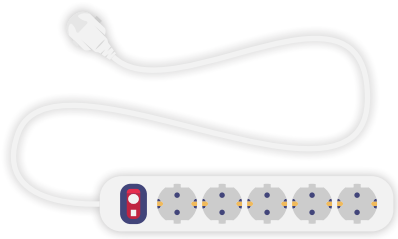
ABATTOIR

This large abattoir, which forms part of a **large food processing company** in South Africa, has an **energy efficiency department** which is constantly looking for **opportunities to reduce energy usage** at its various plants.

01

Background:

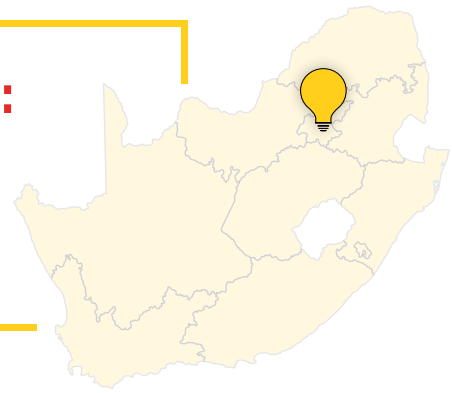
Abattoirs typically **require lots of electrical energy** for their processes, most of which involve **electric motors.**



02

Where:

Gauteng



03

Client Profile:

This large abattoir, which forms part of a **large food processing company** in South Africa, has an energy efficiency department which is constantly looking for opportunities to **reduce energy usage** at its various plants.

04

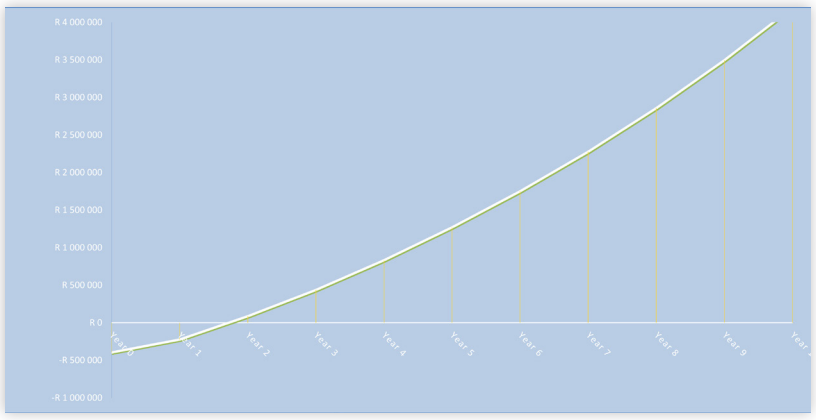
Assessment:

We were asked to submit a proposal to supply and install power factor **correction equipment** at one of their plants in Eastern Johannesburg. Following a detailed audit of the requirements, we installed power factor correction equipment.

05

ROI:

The customer **recovered his investment of R395k** in just under 18 months and has a projected total savings in electricity costs in excess of R 4,000,000 over the **minimum life expectancy of the PFC equipment,** which is 10 years.



06

PFC Installation:

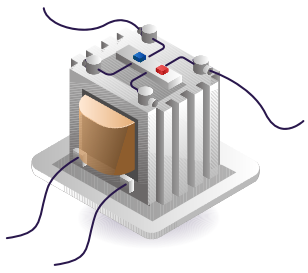
POULTRY FARM

This Poultry Farm wanted to add **2 additional chiken coops** on his farm.

01

Background:

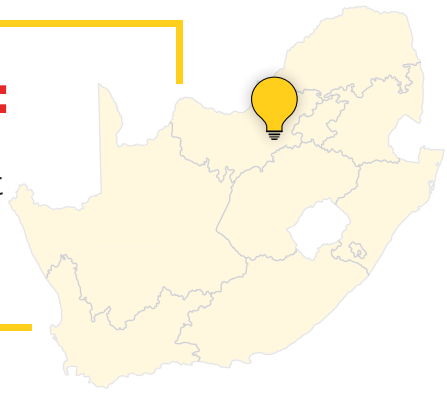
The **supply transformer** could not accommodate the additional load.



02

Where:

North West Province



03

Client Profile:

Although this was a very successful farmer, the upgrade of his **electrical supply** would be so **exorbitant which made the ROI** not so attractive.

04

Assessment:

The Power Factor on this Farm was very low and therefore installing a 100 kvar PFC panel allowed us to free up **sufficient capacity** on the supply transformer to **add 2 additional coops** of 50,000 chickens.

05

ROI:

Cost: R30,000
The resulting Turnover and Profit Resulted in a Return On Investment of **under 2 months.**

ROI: <2 Months

06

PFC Installation:

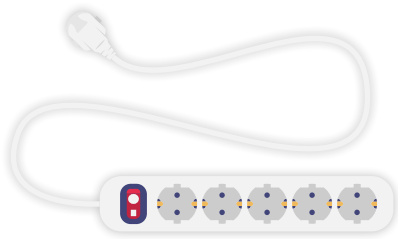
COOL DRINK MANUFACTURER

A well known cool drink manufacturer was **experiencing production challenges** with a new bottling line.

01

Background:

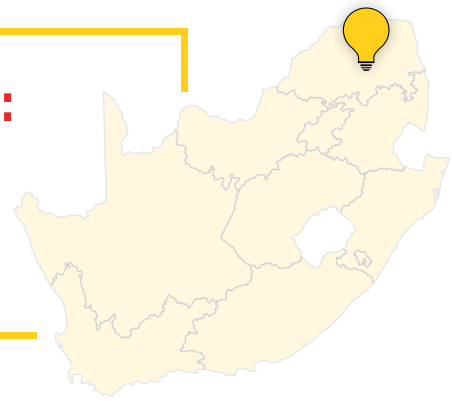
Preliminary investigations pointed to possible **power quality issues.**



02

Where:

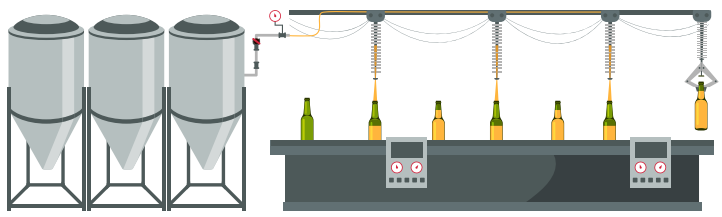
Limpop Province



03

Client Profile:

Our client called us in to carry out a detailed **network analysis** in their factory.

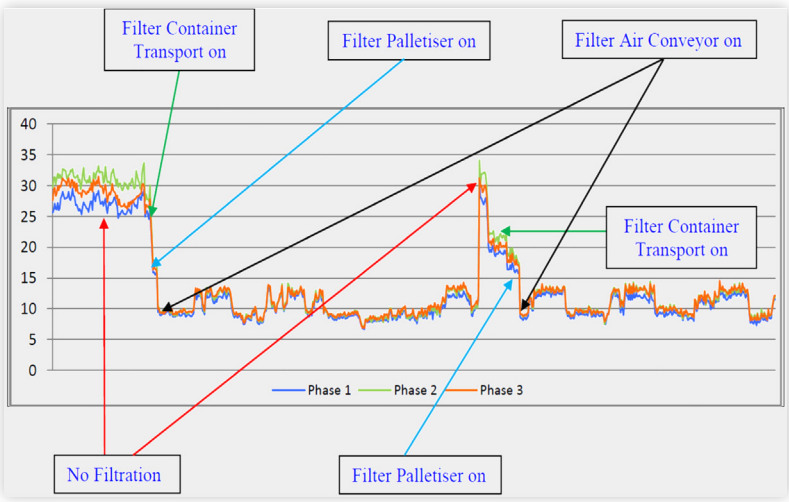


04

Assessment:

An audit revealed **excessive harmonic levels** present in the system.

Active Harmonic filters would have to be installed at various hotspots



05

Result:

The **resulting reduction** of harmonic levels to within **acceptable limits,** resulted in the bottling line achieving nameplate production levels.

06

Harmonic Filtration:

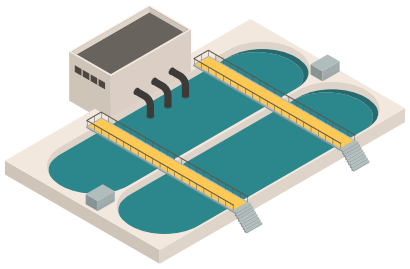
MINERAL PROCESSING PLANT

Alpha Power Solutions

01

Background:

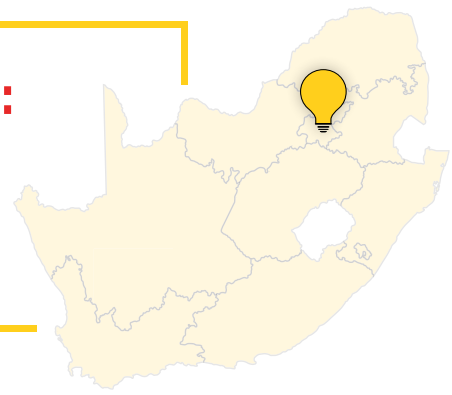
This mineral **plant approached** us



02

Where:

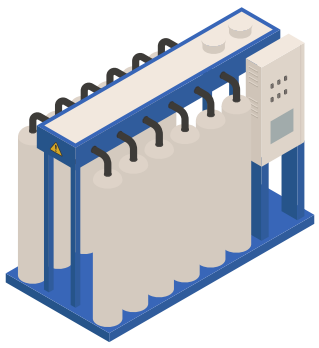
Gauteng



Assessment:

03

This plant had a **Power Factor Correction** of 0,76



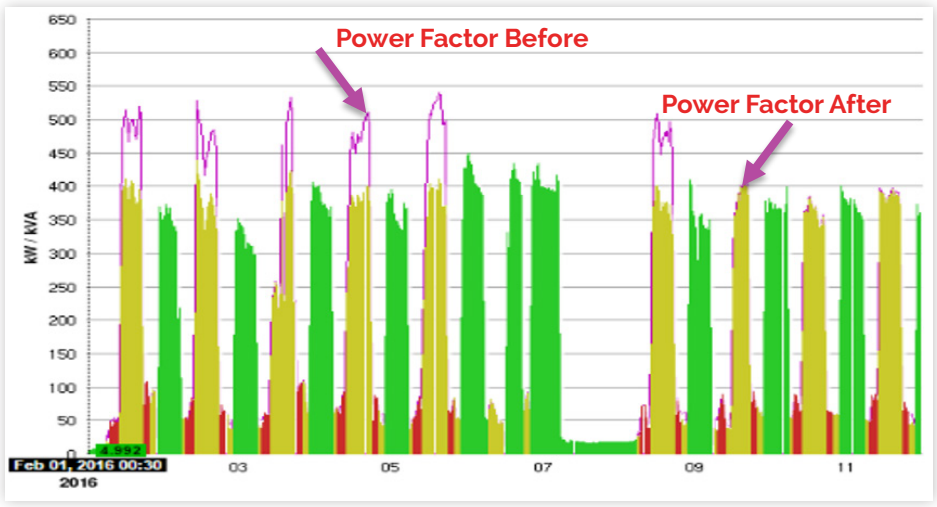
ROI:

04

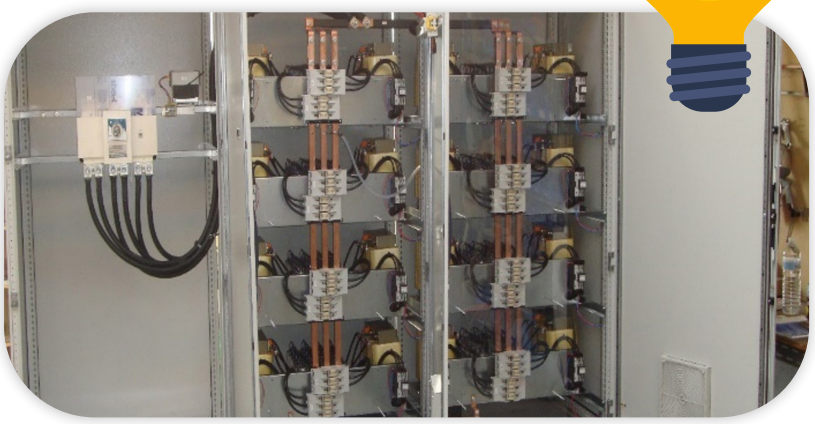
By installing a Power Factor Correction System worth R210,000 on 20 February 2016, we helped this customer **reduce his maximum demand by 24%.** This translated into a monthly **reduction in electricity cost of R15,000 per month.**

PFC Installation:

05



ROI: 14 Months

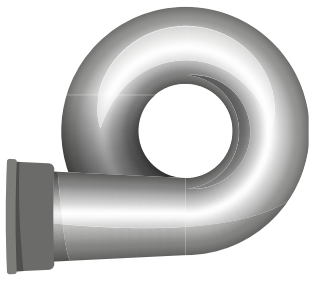


CHROME MINE

Alpha Power Solutions

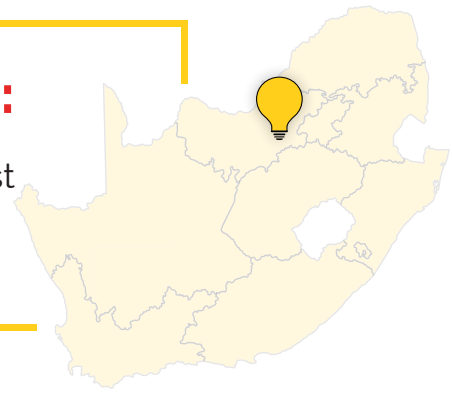
01 Background:

This chrome mine was e**xceeding the kVA rating** of its supply.



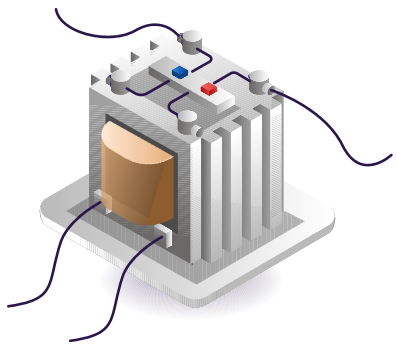
02 Where:

North West Province



03 Client Profile:

By **constantly expanding** and adding more electrical equipment, this **mine's supply transformers** could not supply the required kVA.



04 Assessment:

Applying for more power from Eskom but the **costs were exorbitant:**

	1000kVA transformer	500 kVA transformer
kW	700	350
pf (before)	0,7	0,70
kVA (before)	1000	500
pf (after)	0,99	0,99
kVA (after)	707	353
Saving (kVA/month)	293	146
kVA saving (%)	29,3%	29,3%

05 PFC Installation:

By **installing Power Factor Correction,** the mine was able to reduce the load on the **supply transformers by 29%** which allowed them to expand even further without having the increase their Eskom supply.

ROI: 3.2 Months

06 ROI:

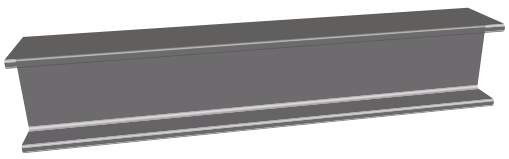
The mine informed us that their **investment payback period** had been calculated at 3.2 months

STEEL FABRICATION

Alpha Power Solutions

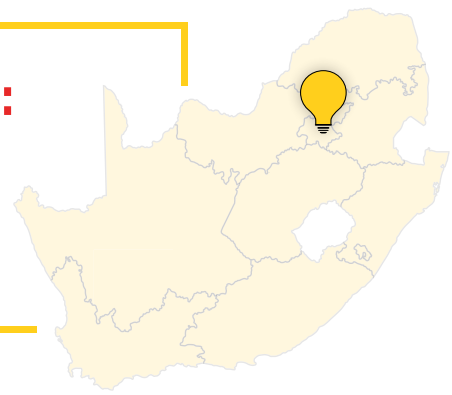
01 Background:

A **steel fabrication plant** in the East Rand approached us to help them **reduce their electricity costs.**



02 Where:

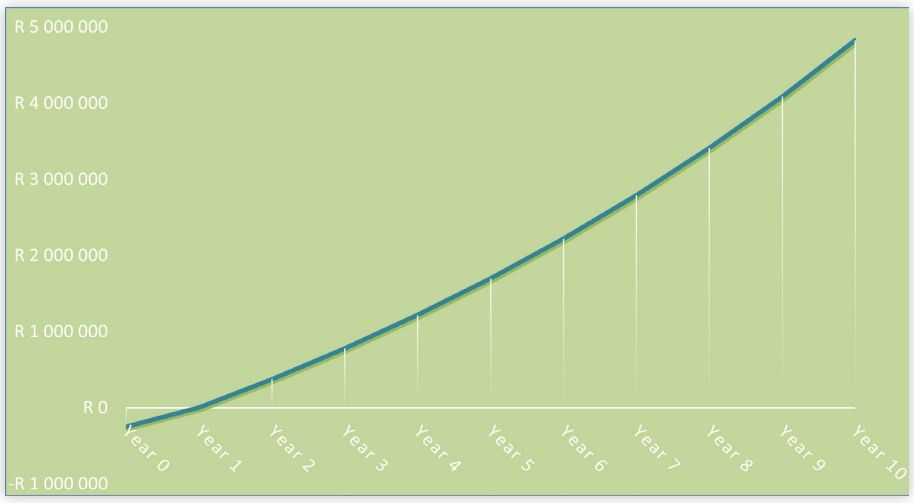
Gauteng



03 Assessment:

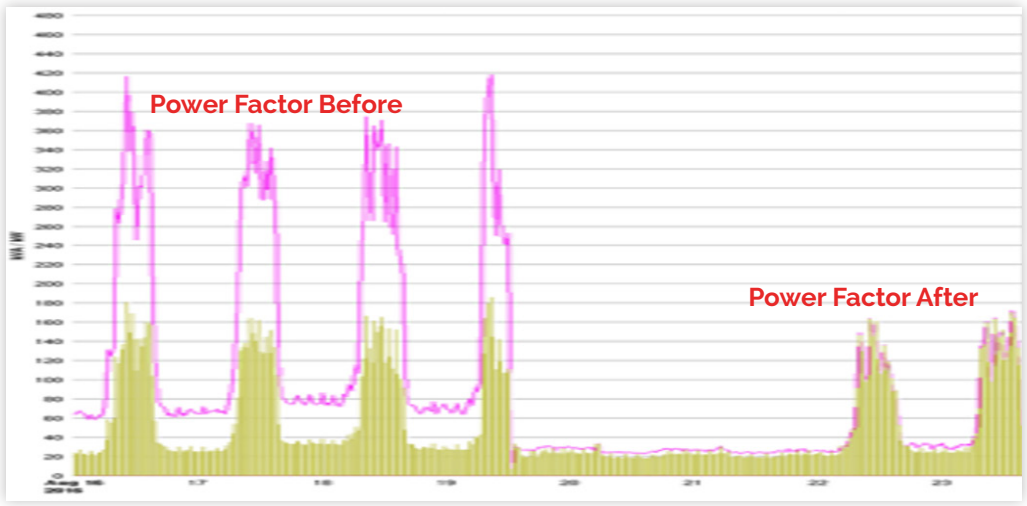
This plant had a **Power Factor Correction** of 0,39.

04 ROI:

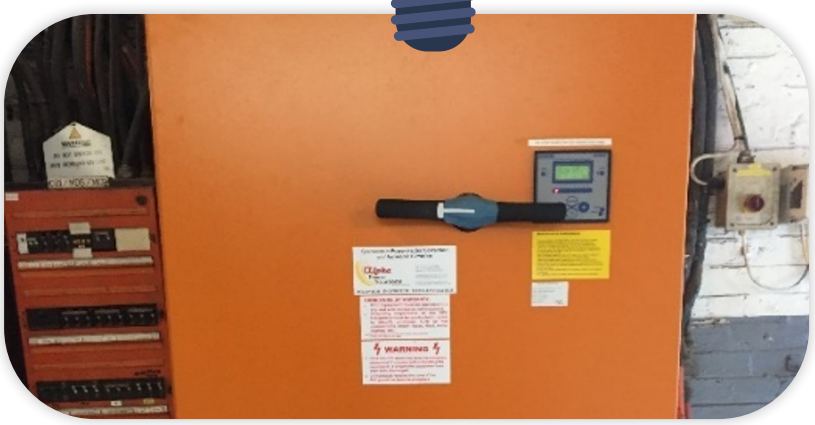


By installing a power factor correction system worth **R235,000,** we helped this customer **reduce his maximum demand by 59%,** which translated into a monthly **reduction in electricity costs of R21,000** and an **ROI of 10.3 months**

05 PFC Installation:



ROI: 10.3 Months



CAR COMPONENT MANUFACTURER

Alpha Power Solutions

01

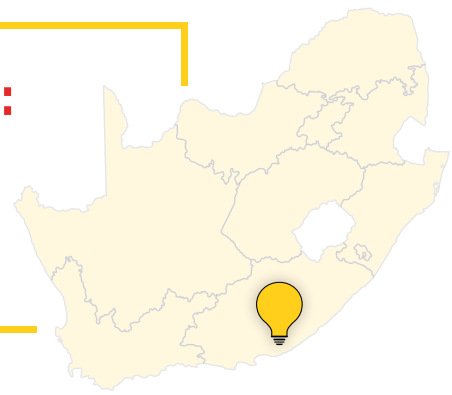
Background:

This **component manufacturer** in Uitenhage approached us to help reduce their **maximum demand.**

02

Where:

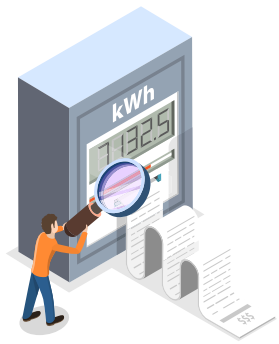
Eastern Cape



03

Assessment:

This plant had a **Power Factor Correction** of 0,76



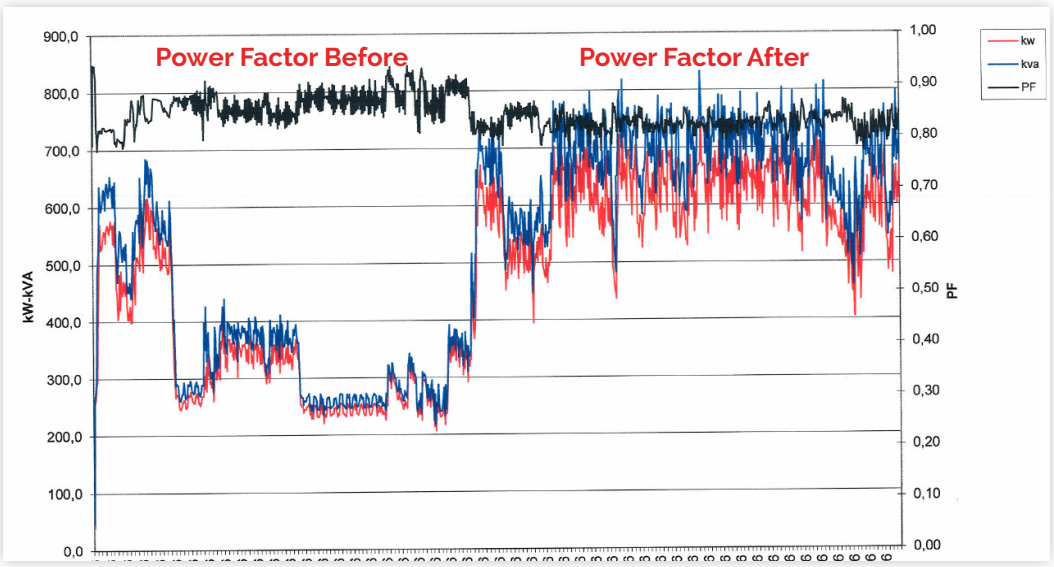
04

ROI:

A **R 255,000 investment** in PFC equipment in early 2016 resulted in a **monthly saving of R17,500** with a projected **Return Of Investment of 14,3 months.**

05

PFC Installation:



ROI: 14.3 Months

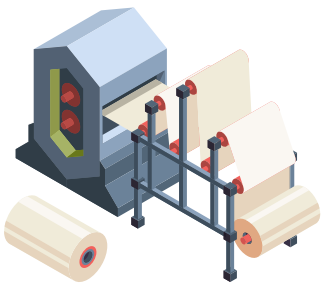
PAPER MANUFACTURING COMPANY

Alpha Power Solutions

01

Background:

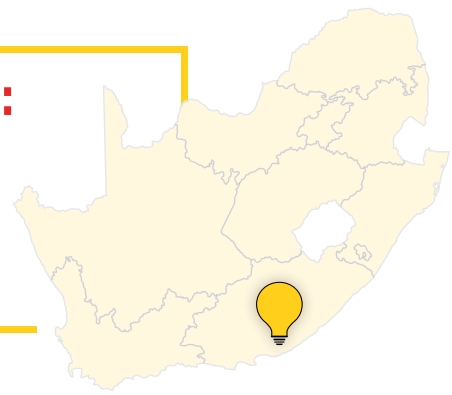
A paper manufacturing company approached us for an **electrical load profile analysis,** in order to determine the **power factor correction requirements** of their plant in Gqeberha



02

Where:

Eastern Cape



03

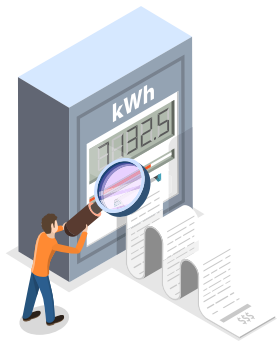
Assessment:

The **load profile data** which the company provided us with, gathered from their online meters, coupled with recent electricity bills, speeded up the process.

We visited the **site in order to measure** the harmonic levels present in their system and determine the **installation constrains** for the equipment.

04

ROI:



The investment payback period of the recommended PFC equipment was estimated at approximately **10 months**

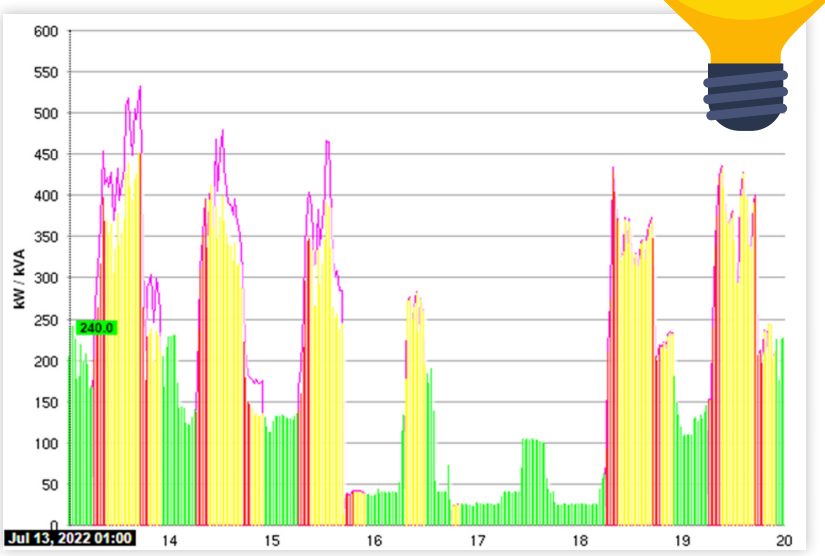
The recommended PFC equipment was installed in July 2022 year and the **savings materialised immediately**, as predicted.

05

PFC Installation:

The whole process from first interaction to project handover took **less than a month**

ROI: 10 Months



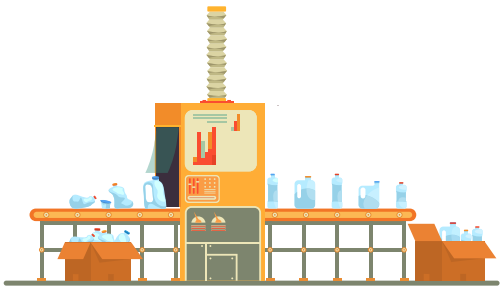
PLASTIC BOTTLE MANUFACTURER

Alpha Power Solutions

01

Background:

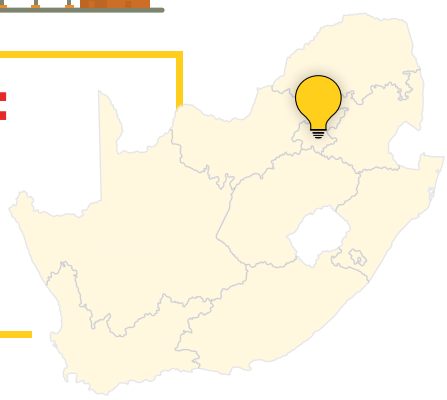
We were **contacted to complete** the installation



02

Where:

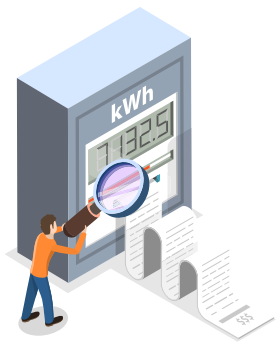
Gauteng



03

Assessment:

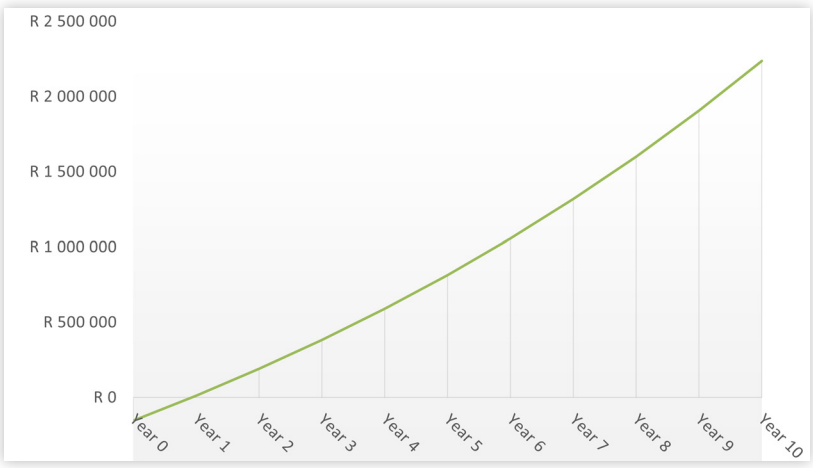
We installed a 300 kvar **Power Factor Correction Panel.**



04

ROI:

The customer **invested R150,000** in this project which **paid for itself in 11 months.** To date, this customer has **saved close to R 1,000,000** through this energy efficiency intervention



05

PFC Installation:

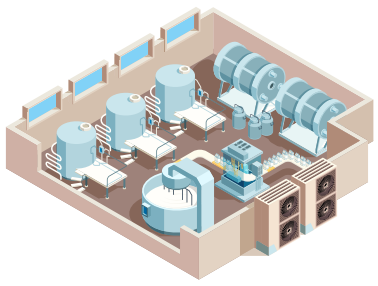
FOOD PROCESSING PLANT

Alpha Power Solutions

01

Background:

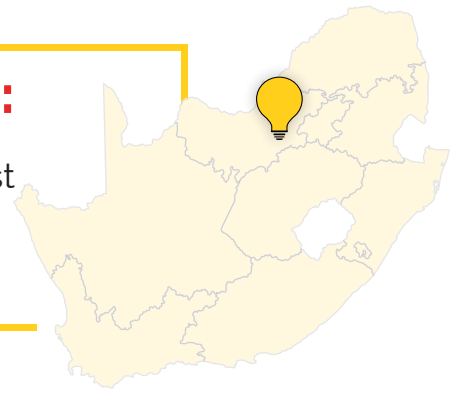
The customer need **additional capacity** on his electrical supply.



02

Where:

North West Province



03

Client Profile:

In order to install an **additional production line,** the client needed additional capacity.

04

Assessment:

Cost quoted by Eskom for the additional capacity as in excess of **R 2,000,000.**

We data logged the **Customer's Profile for a week to determine** whether a PFC intervention would **free up sufficient capacity** for him to add the production line to his existing installation.

	Transformer 1	Transforme r 2	Total
kW	593	528	1121
pf (before)	0,84	0,79	0,81
kVA (before)	711	668	1379
pf (after)	0,99	0,99	0,99
kVA (after)	599	533	1132
Saving (kVA/month)	111	135	246

05

PFC Installation:

By **installing the recommended** Power Factor Correction equipment at a cost of R500,000 the customer was able to add the **factory expansion** he needed **without** a supply upgrade from Eskom.

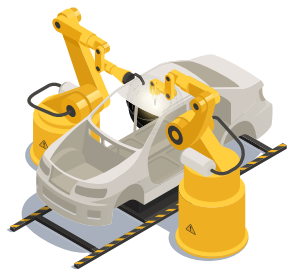
COMMERCIAL VEHICLE, LOAD BODY SPECIALISTS

Alpha Power Solutions

01

Background:

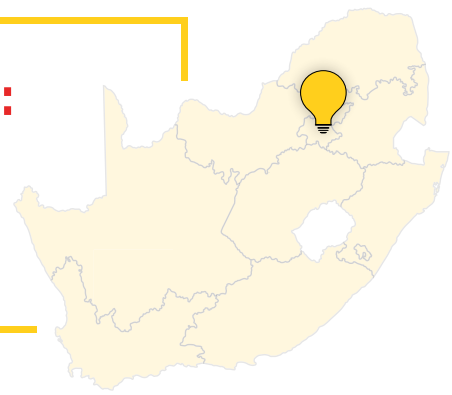
An **automotive body manufacturer** approached us to help **reduce their monthly** electricity costs.



02

Where:

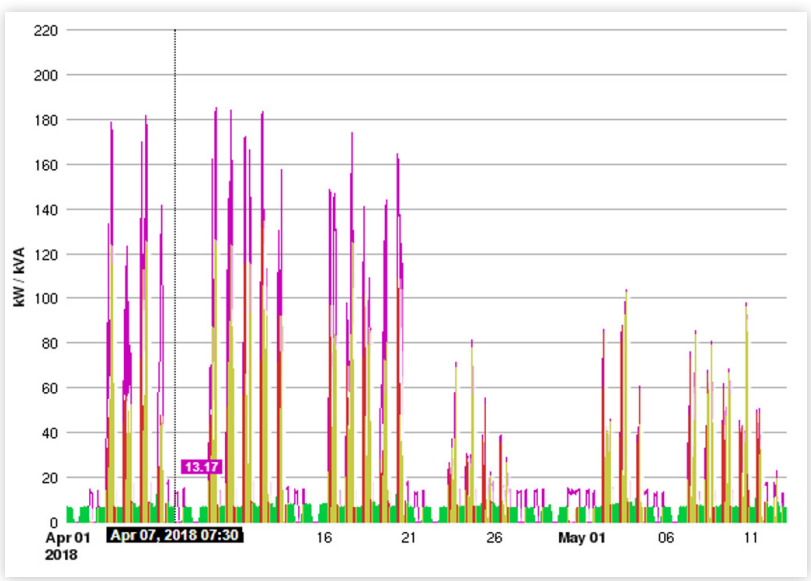
Gauteng



03

Assesment:

Before the **PFC panel was installed,** the "wasted" apparent power (kVA) drawn from the grid can be seen in the graph below (the purple spikes above the **yellow bars**).



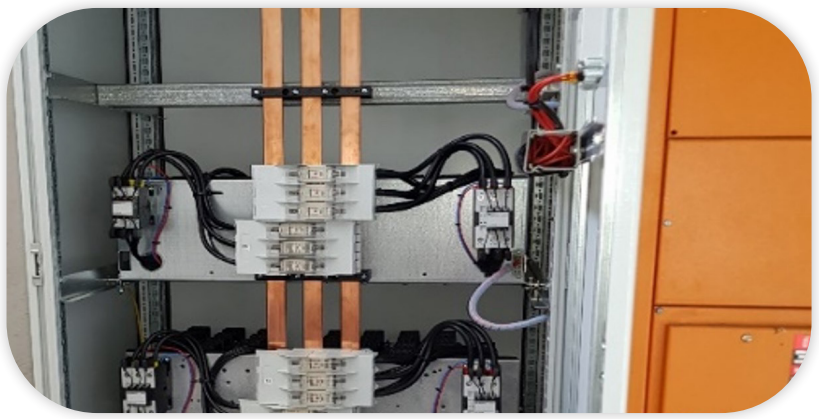
04

ROI:

The customer **recovered his investment of R95k** in just under 20 months. Over the minimum life expectancy of the PFC panel (10 years), the customer will save in excess of R850,000

05

PFC Installation:



PAPERMILL

Alpha Power Solutions

01

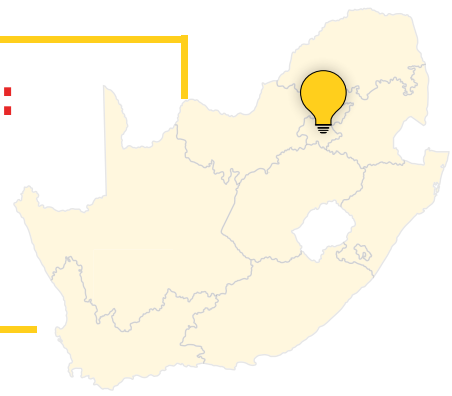
Background:

At the request of a **papermill company** in Johannesburg, we conducted a **full investigation on their electrical load profile** in order to determine their power factor correction requirements

02

Where:

Gauteng



03

Assesment:

Our investigation revealed the following:

- The customer required an **initial investment** of R370k for the installation of the required power factor correction system
- The **monthly savings** from the required investment is in excess of R80k (savings from a reduction in maximum demand charges as well as reactive power consumption charges)
- The **investment payback** period is approximately 4 months

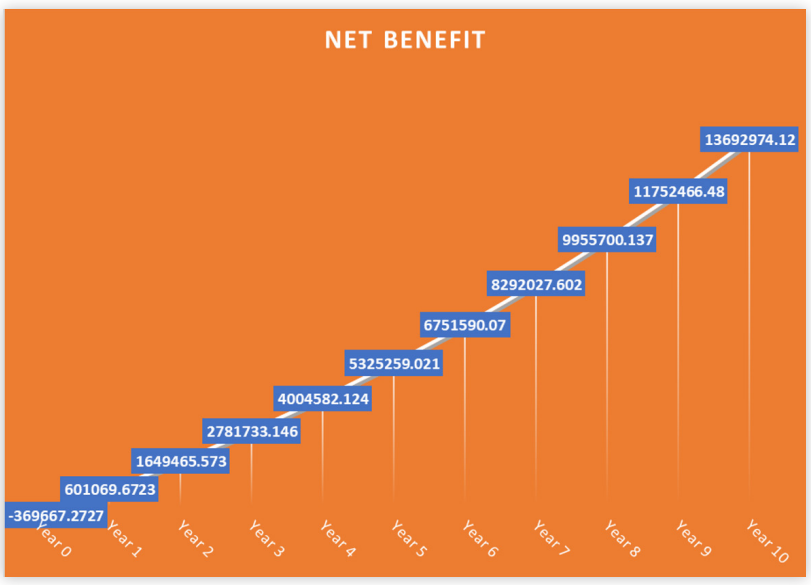
04

ROI:

With an **equipment life expectancy** of at least 10 years, the total estimated savings over a period **10 years is estimated** to be in excess of R13M

05

Net Benefit:



PLASTICS COMPANY

Alpha Power Solutions

01

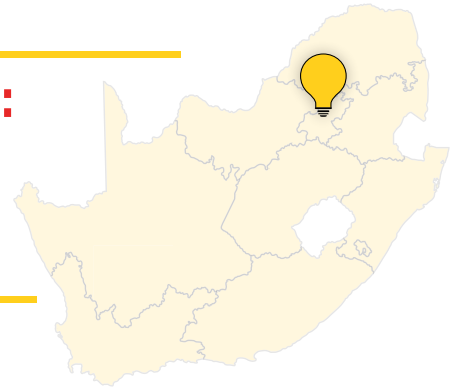
Background:

A plastics company in Johannesburg asked us to **assist them in resolving problems** they were having with one of their machines. It was **continuously tripping,** and the machine computer was raising an "input voltage not sufficient" alarm.

02

Where:

Gauteng



03

Assesment:

We installed our **sophisticated recording equipment,** one on the main incomer and another one on the supply to the problematic machine.

From the recorded data we discovered that:

1. There were **voltage dips in the distribution** system, but the machine never tripped as a result of these supply voltage dips
2. The machine tripped when the **supply power was stable**

The **investigation done by our technicians** with our sophisticated, high-speed loggers, resulted in the accurate assessment of the problem, before offering a solution.

04

ROI:

We could have installed **expensive voltage stabilising equipment** suggested by the manufacturer of the problematic machine, but had we done so, the problem would still not have been resolved

At Alpha Power Solutions, **we are committed to helping our customers,** by offering them the right solution, with the best possible cost/benefit ratio.

CONTACT US

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