



EQS Energy

The power to save



## Current situation in South Africa

South Africa has run out of capacity. Eskom is promoting and endorsing energy conservation measures for commercial buildings nationwide as South Africa is currently experiencing rolling brown outs; power is turned off for a few hours in order to share the available power.

### Excessive energy wastage leads to exorbitant costs for businesses:

- Lights continue burning throughout the whole building when anybody works late.
- Lights continue burning throughout the whole building when nobody is there at night and on weekends.
- Lights continue burning in car parks when no one is there.
- Lights continue burning in offices, conference, server and storerooms when no one is there.

## Opportunity

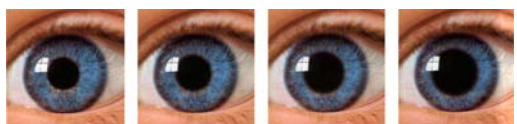
- EQS Energy provides an improved bottom line through savings on your Lighting, Heating and Air conditioning (HVAC) bill.
- Savings from month one.
- Office productivity improves through a better working environment for staff
- No risk, high reward

## Ideal Situation

- Improved bottom line through reduced light and HVAC costs
- No out of pocket costs to achieve this
- Effective management of light and HVAC usage
- Optimal Safety, Health, Environment (S.H.E.) applications
- Relief for today's stressed eyes
- Regulated levels of light from lamps and light fixtures according to the amount of light actually required
- Constant levels of pleasant lighting, no matter whether its dark outside or the sun pouring in through a window
- **Guarantee** the **lowest** monthly electricity bill possible

## Environment

South Africa is the world's third highest emitter of carbon dioxide - ninety four percent of our energy produced by low-grade coal power stations. Customers who have installed the **Electro Sense Proactive Energy Management System™** have become **greener** – more environmentally responsible. Our system removes the equivalent emissions of all the vehicles parked on a company's premises – whether it is a large or small organisation. The **Electro Sense Proactive Energy Management System™** effectively counters the environmental impact of the energy producing industry in South Africa.



**ADD CONVENIENCE, CUT COSTS AND HELP THE ENVIRONMENT**

## **Existing Situation**

**Werksmans – Sunday Night**



**Alexander Forbes – Sunday Night**



**Investec Parking – Sunday Night**



**Nestle – Sunday Night**



**PWC – Sunday Night**



**Vodacom – Sunday Night**



**SCC – Sunday Night**



**JSE – Sunday Night**



**The Campus – Sunday Night**



**Alexander Forbes – Sunday Night**



**RMB – Sunday Night**

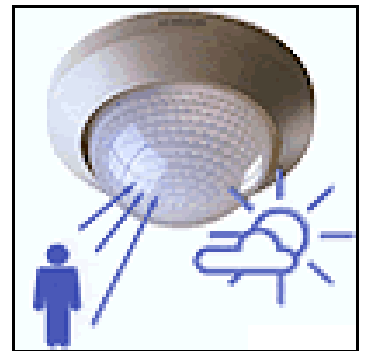
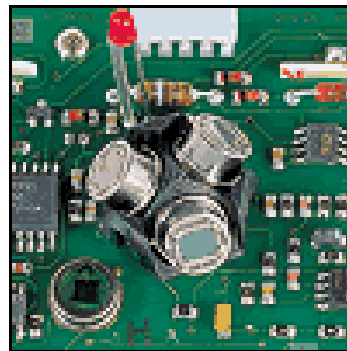




## The innovative solution for intelligent lighting control

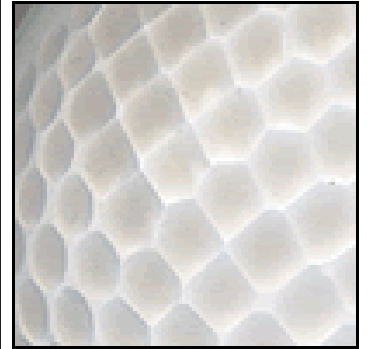
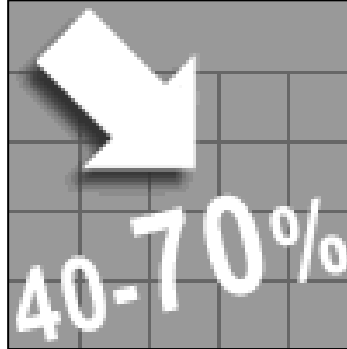
### The Solution

- The **Electro Sense Proactive Energy Management System™** for modern building management with technology from Steinel
  - Lighting
  - Heating ventilation
  - Air conditioning
- Power is supplied when required but **only** when required



### The Technology

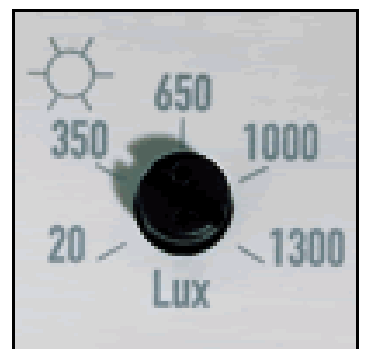
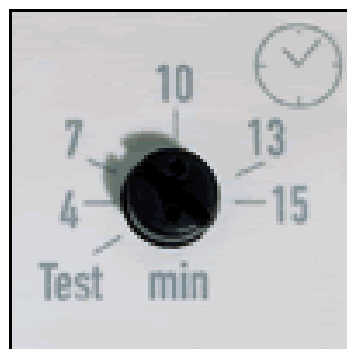
- Occupancy Sensors from Steinel
- What does the system do?
  - Occupancy detection
    - 360°
    - Fine finger movement
    - Range up to 20 metres
  - Natural light detection
    - Lux level sensors measure ambient light levels
  - Lighting control
    - Adjusts level of illumination
- If no-one is there
- If a natural light source is present
- The **power is turned off**



3 pyro sensors detect human infrared radiation; the light sensor measures ambient brightness

### Advantages you can't overlook

- High energy saving
- Generous long-distance range of up to 20 m
- Extremely high switching capacity of 2000 watts – can be used with an external contactor if more lighting control is needed.
- Integrated dimmer function for constant lighting level



Controls for adjusting the brightness setting and automatic switch-off facility



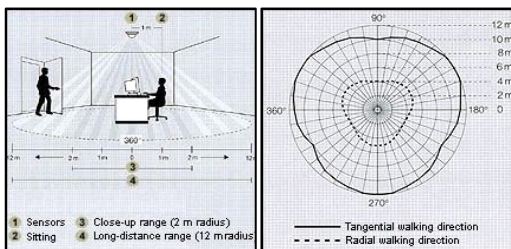
## Additional Benefits

Client will derive secondary benefits that will result in additional savings:

- 1 Lower Peak Demand - some lights will be off when the air conditioners are coming online in the morning.
- 2 Lower Consumption - less heat generated by the lights resulting in less work for the air conditioners.
- 3 Longer bulb life and fewer bulb changes - a threefold increase in the time between bulb changes.
- 4 Reduced maintenance costs - longer time between bulb changes.
- 5 Increased savings with each Eskom price increase.
- 6 Sustainable energy savings for the life of the building.

Client will derive marketing and other benefits:

- 1 Increased property value due to energy efficient buildings.
- 2 More attractive rental for outside companies due to energy efficient office space.
- 3 Increased security – if there is no motion there are no lights. Cameras record only when motion is present.
- 4 Perceived as an eco-friendly and environmentally concerned company.
- 5 Viewed as a good corporate citizen helping to prolong the South African energy supply.

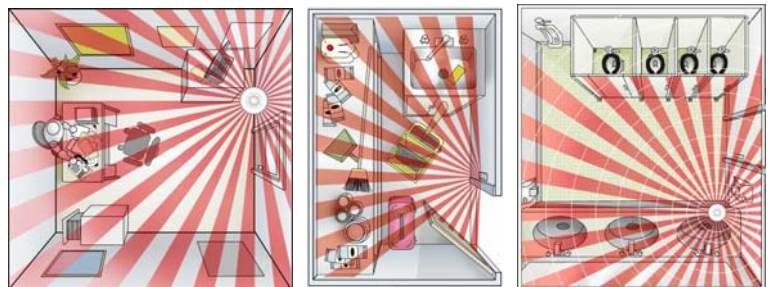


## Technology

The **Electro Sense Proactive Energy Management System™** uses state of the art lighting and energy management technology from Steinel GmbH of Germany. Steinel was established in 1959 and is a world-wide leader in the design and manufacture of lighting and energy management controls.

Steinel's proprietary technology utilises highly specialised infrared sensors that detect body heat in the form of infrared radiation and lux level sensors to measure ambient light levels combined with an advanced solid state processor to control the lighting circuits. This sophisticated technology is used in all Steinel energy management controls.

A multilens attachment divides the infrared detection zone into 1416 individual segments. The result is that fine finger movements as little as 10 centimetres can be detected at a range of up to 2 metres while the ability to detect larger body movement is an impressive 20 metres.



Simultaneously, the lux level sensor constantly measures ambient brightness and compares it with the user-controlled setting. The built-in electronics process the information received from the three infrared sensors and the lux level sensor.

The integrated result is then used to control the lighting and level of illumination of all light sources connected. When no movement is detected or the ambient light level is above the set value the LuxMaster turns off all lights connected to it.

The mean time to failure for the LuxMaster is an industry leading 50 years / 500 000 switches. All Steinel energy management products come with a three year onsite warranty. The **Electro Sense Proactive Energy Management System™** requires no human intervention to generate maximum savings of electricity.

ADD CONVENIENCE, CUT COSTS AND HELP THE ENVIRONMENT



## Environmental Impact

Environmental implications of using one kilowatt-hour of electricity

Each Saved KWh saves the following:

Water usage (l) .....	1.27
Coal usage (kg) .....	0.49
Ash produced (g) .....	132,62
Ash emitted (g) .....	0.29
SO <sub>2</sub> emissions (g) .....	7.56
NO <sub>x</sub> emissions (g) .....	3.55
CO <sub>2</sub> emissions (kg) .....	0.89

Figures are based on total energy produced by Eskom power stations.

## No Risk – High Return

- The system is paid for out of the savings
- The monthly financed cost is less than the monthly savings
- Very attractive Returns On Investment

## What's in it for you?

- Increased savings whenever Eskom increases prices
- Sustainable energy saving
- Total savings range 40% - 90%
- Increased staff productivity
- Eco-Friendly – good corporate citizen
- Risk free savings
- Helping to prolong the South African energy supply
- Self management
- **Add Convenience, Cut costs and Help the environment**

## Application

EQS Energy provides a solution that is an extremely versatile lighting control system which is useful in all buildings where it is not always possible to check when lights are switched on and off. Especially in all rooms that are directly affected by sharp fluctuations in daylight. In other words: in public authorities and offices, in banks, shopping malls, schools, factories, workshops, storerooms and hotels.



Tailored to large rooms and open plans



Ideal for conference and meeting rooms



Any size office with almost any lighting can be controlled



Car parks are areas for great savings



ADD CONVENIENCE, CUT COSTS AND HELP THE ENVIRONMENT

## Unique in concept and performance

The **Electro Sense Proactive Energy Management System™** is based on cutting-edge sensor, light and electrical engineering from STEINEL.

This sensor technology utilises the fact that the human body radiates heat. Just as light, this heat is part of the spectrum of electromagnetic waves and is known as infrared radiation.

Three highly sensitive pyro sensors detect human infrared radiation; the light sensor measures ambient brightness

To be more precise, they sense the fluctuation in temperature that occurs when a person enters their detection zone. A multilens attachment divides the detection zone of the sensors into many small segments. This means that temperature fluctuations resulting from the slightest of movements – As little as 10 centimetres - are capable of activating the sensors.

At the same time a light sensor constantly measures ambient brightness and compares it with the brightness setting.

The built-in electronics process the information received from light sensor and pyro sensors. This information is then used to control the lighting and level of illumination of all light sources connected.

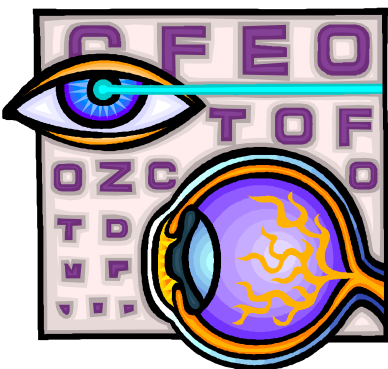
In terms of modern building management, LuxMaster affords contemporary convenience and cost-cutting efficiency. The system is practical and simple to operate, and because it only switches on the light when it is actually needed, you use 40 - 90 % less energy.

## The eye has more than an 8-hour day

Our eyes have to adjust to a wide range of lighting conditions - from half-light at dawn to the bright midday sun and back to evening darkness. But that's not all. Artificial lighting in the modern work environment also bombards the eye with different light sources of varying intensity.

The LuxMaster lighting control system from STEINEL brings relief to today's stressed eyes. It regulates the level of light emitted from connected lamps and light fixtures according to the amount of light that is actually required, thus providing a constant level of pleasant lighting. No matter whether it's dark outside or whether the sun is pouring in through the window.

And what's more - LuxMaster only turns the light on when it is really needed. In other words, LuxMaster switches on light sources when people are in the room and automatically turns them off again when they leave.



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## Case Study



An **Electro Sense Proactive Energy Management System™** was designed and installed at the Dimension Data Campus in Bryanston, Gauteng, South Africa. Around 2534 sensors were installed throughout the facility which is one of the largest commercial sites in South Africa (75 000<sup>m</sup><sup>2</sup> of office space and 113 000<sup>m</sup><sup>2</sup> of underground parking).

Installation in 3 of 15 buildings at the Dimension Data Campus facility in Bryanston was projected to save 67% of the total kWh consumption of electricity by the lighting system. Independent M & V by Tshwane University verified a massive 85.5% savings. The system was first installed March 2003 and has performed reliably with no failures in that time. Table 1 summarizes the consumption savings results and shows the environmental impact.

**Table 1 Consumption Savings**

	Electricity Consumption KWh	Cost Rand	Emissions ( kg )				
			CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>x</sub>	Particles	Water
Baseline	600995	90930	530078	1923	481	421	739223
Actual	87333	13213	77028	279	70	61	107420
Savings	513662	77717	453050	1644	411	360	631803
<b>% Savings</b>	<b>85.5%</b>						

In addition to consumption savings, demand savings were also achieved. Tables 2, 3 and 4 summarize the KW reductions achieved for the various time periods for Weekdays, Saturday and Sunday.

**Table 2 Demand Savings Weekdays**

Weekdays Averages - Demand								
	Time	Morning	Morning	Morning	Midday	Evening	Evening	Evening
		Off-peak	Standard	Peak	Standard	Peak	Standard	Off-peak
		00:00-06:00	06:00-07:00	07:00-10:00	10:00-18:00	18:00-20:00	20:00-22:00	22:00-00:00
Baseline	KW	157.23	156.63	161.13	157.84	151.06	150.17	149.7
Measured	KW	10.89	81.54	138.55	143.61	86.07	40.12	24.01
Saving	KW	136.34	75.09	22.58	14.23	64.99	110.05	125.69
<b>% saving</b>		<b>86.7%</b>	<b>47.9%</b>	<b>14%</b>	<b>9%</b>	<b>43%</b>	<b>73.2%</b>	<b>84%</b>

EQS Energy (Pty) Ltd operates from Johannesburg, South Africa. EQS Energy markets, sells and installs the **Electro Sense Proactive Energy Management System™** for the control of corporate and commercial building lighting systems. Our solution creates considerable savings of up to 80% of the total cost of electricity used in lighting for its customers.

### EQS Energy is committed to:

- Helping its customers achieve maximum profitability by reducing the operating cost of their facilities.
- Providing outstanding customer service and support before, during and after installation.
- Helping South Africa conserve energy and prolong its energy supplies.

In today's cost, conservation and environmentally conscious business environment, the Electro Sense Proactive Energy Management System™ makes sense.

EQS Energy (Pty) Ltd. Postnet Suite 105, PVT Bag X75, Bryanston, 2021  
Tel: 0861 544 454 Fax: 086 541 8763 Email: sales@eqsenergy.com Web: www.eqsenergy.com