YEHANS INTERNATIONAL

ENERGY SAVINGS AND AUDIT SOLUTIONS

SAVE ENERGY | SAVE MONEY | SAVE THE ENVIRONMENT

TABLE OF CONTENTS

YEHANS INTERNATIONAL

Mission Statement

To provide our valuable clients with an overview of our concepts and services and present the benefits of an energy audit towards energy efficiency

OUR COMPANY PROGRESS

YEHANS INTERNATIONAL

+ 250 Employees

6 Different Departments

18 Years in Operation & Counting

4 Different Country Presence

We specialize in
Building Management Services
Building Construction Services
Security & Surveillance Services
Energy Saving & Audit Services

CONTACT US

Physical Address
75 Boundary Road
East Legon, Accra

Ghana Postal Code
GD-185-7157

Mailing Address
P. O. Box CT 5341
Cantonments, Accra.

Telephone Numbers
Local 0 302 512 525
International : + 233302512525

Customer Service Emails
info@yehansinternational.com
sales@yehansinternational.com

THE YEHANS ADVANTAGE

YEHANS INTERNATIONAL

- ✓ Our company utilizes years of applied experience working in every major facility type, including commercial office space, manufacturing, light-industrial Businesses and Residential properties to provide you added value service in the energy savings & audit service.
- ✓ We Specialize in Building Energy Efficiency Solutions
- ✓ Local knowledge of culture / language / business context
- ✓ Extensive experience in providing training for local staff

CALL + 233 302 51 2525 FOR YOUR FREE CONSULTATION

Methods to deliver energy solutions

- Conducting an Energy Audit
- Providing Energy Savings Solutions
- Selling hardware (Direct Sales)
- Selling service (Service Provider)

OUR SATISFIED CLIENTS

ERNEST CHEMISTS LIMITED

UNITED STATES OF AMERICA EMBASSY

DANGOTE

The Royal SENCHI

MTN

SOCIAL SECURITY AND NATIONAL INSURANCE TRUST

ELECTRICITY COMPANY GHANA LTD

Ministry of Communications Republic of Ghana

LOCATION : 75 Boundary Road, East Legon, Accra | TELEPHONE : +233 302 51 2525 | EMAIL : info@yehansinternational.com | WEBSITE : www.yehansinternational.com

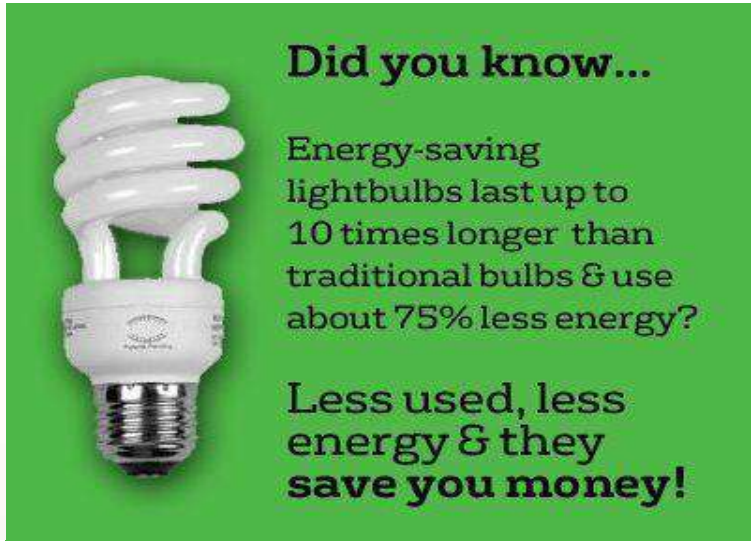
BENEFIT TO OUR CLIENTS

YEHANS INTERNATIONAL

Money: Operational cost-efficiencies = positive impact on business profitability
Security: Increased energy security (electricity outages, reliability)
Quality: Increased comfort and lower maintenance
Environment: Reduced environmental impact and increased sustainability of buildings
Image: Energy savings = environment protection = increased marketing potential (corporate social responsibility)

"THE ENERGY EFFICIENCY AUDITING IS AN EXCELLENT SERVICE. IT PROVIDES OUR ENGINEERS WITH THE TECHNICAL DETAIL THAT WE NEED TO BE CONFIDENT IN OUR PROJECTIONS AND SOLVING PROBLEMS, AND IT PRESENTS THE RESULTS IN AN ATTRACTIVE WAY THAT APPEALS TO OUR CLIENTS. I'M CONFIDENT THAT YOUR COMPANY WILL BE DOING MORE WORK WITH YEHANS INTERNATIONAL IN THE COMING MONTHS AND YEARS."

Director of Yehans International
Cyril A. Yeboah



WHAT IS ENERGY AUDIT ?

YEHANS INTERNATIONAL

IT IS THE

- ❑ Study of the energy use and wastes of your facilities
- ❑ Energy efficient turnkey solution recommendations

OBJECTIVES

- ❑ Give a better understanding of the energy consumption
- ❑ Identify and reduce energy wastage and inefficiencies
- ❑ Reduce the energy costs and environmental impact of the building
- ❑ Establish an energy management program

BENEFITS

Energy Audits can create **savings up to 50%** off the energy consumption of buildings in use.

LOCATION : 75 Boundary Road, East Legon, Accra | TELEPHONE : +233 302 51 2525 | EMAIL : info@yehansinternational.com | WEBSITE : www.yehansinternational.com

THE AUDIT PROCESS

YEHANS INTERNATIONAL

STEP 1: THE PARTS OF THE AUDIT EQUATION

STANDARD PROJECT : Initial Consultation & Audit is Free of any charges

LARGE AND SPECIFIC PROJECTS : A pre-audit site survey will be necessary. Yehans Engineering team will review the site before providing an Energy Audit quotation

STEP 2 : Agreement & Contract

Should management decide to proceed, following a meeting and presentation of the quote, a contract will be drawn up to outline the costs and time frame of the project

STEP 3 : On-site Data Collection

Detailed analysis of the site to determine where, when and how energy is used:

- ✓ Evaluation of site, plant, building and equipment operation
- ✓ Survey of all the building and equipment energy specifications
- ✓ Behavioral questionnaire to staff
- ✓ Hourly consumption profile metering over a period of 7 days

STEP 3 : On-site Data Collection

The following physical values are measured and recorded:

- ❑ Electrical energy (power, intensity, voltage, energy, power factor, harmonics, etc.)
- ❑ Temperature (air, surfaces)
- ❑ Humidity
- ❑ Luminosity
- ❑ Flow rates (air, water)
- ❑ Heat flows
- ❑ Pressure (gas, liquids)
- ❑ Sun insulation

STEP 4 : Data Analysis & Investigation on Energy Efficient Solutions

- ❑ Energy consumption indicators calculation (kWh/m2, kWh/staff)
- ❑ Chart of the actual energy use per appliance and building
- ❑ Research and sourcing of materials for customer's unique context
- ❑ Savings and payback period calculation

It is Important to cooperate with staff during interviews and measurements + suggestions for improvements

⚠ CAUTION

LOCATION : 75 Boundary Road, East Legon, Accra | TELEPHONE : +233 302 51 2525 | EMAIL : info@yehansinternational.com | WEBSITE : www.yehansinternational.com

ENERGY CONSUMPTION POWERS

YEHANS INTERNATIONAL

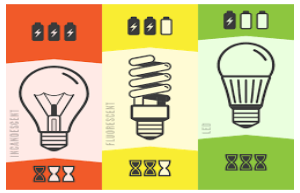
Behavioral training

Energy conservation: An energy saving potential not to forget
→Around **10-15% of savings** of the total bill in most cases

Air conditioning and insulation

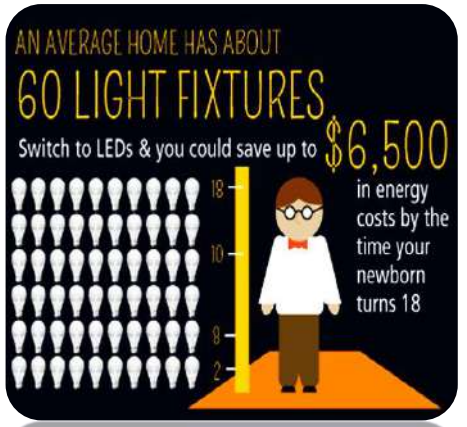
Thermal insulation and shading of buildings
–Reduction of air conditioning load: **more than 20% savings** on AC
Air conditioning maintenance and controls –Optimal operation reduces energy usage and increases systems lifetime

The Airtron Device cuts your electric Bill by additional **40% OFF**



Lighting

Inefficient devices replaced by efficient ones
–optimizing energy usage
→Halogen and T8 to efficient lighting **offers 70% and 35% savings** respectively
Implementing control systems (timers, presence sensors) reduce device working time: more than 30% savings
Better utilization of natural lighting: natural light tube



Office equipment improvement

Optimizing energy usage of computer systems, printers, photocopiers, etc.
Using cloud computing Services and energy efficiency equipment **saves you over 70%** in a year

LOCATION : 75 Boundary Road, East Legon, Accra | TELEPHONE : +233 302 51 2525 | EMAIL : info@yehansinternational.com | WEBSITE : www.yehansinternational.com

ENERGY CONSUMPTION POWERS

YEHANS INTERNATIONAL

Hot water

Solar water heaters or heat recovery from AC units can provide ‘free’ hot water: **up to 90% savings**

Solar Water Heater

Kitchen appliance improvement

Optimizing energy usage of refrigerators, freezers, cookers, dish washers, water coolers, water boilers: between **25%1and 45%2savings**

1.adding control on appliances; 2. change of appliance type and size

Laundry appliances

Optimizing energy usage of washing machines, dryers: **70% savings** by implementing natural drying

Motors

Improving the control system will adjust the power to the load: up to 50%savings*

→Reduce peak power

→Increase lifetime of equipment

Switch to more efficient and well sized motors: **5 –10% savings***

*over sizing of motor by 30%

Pumps

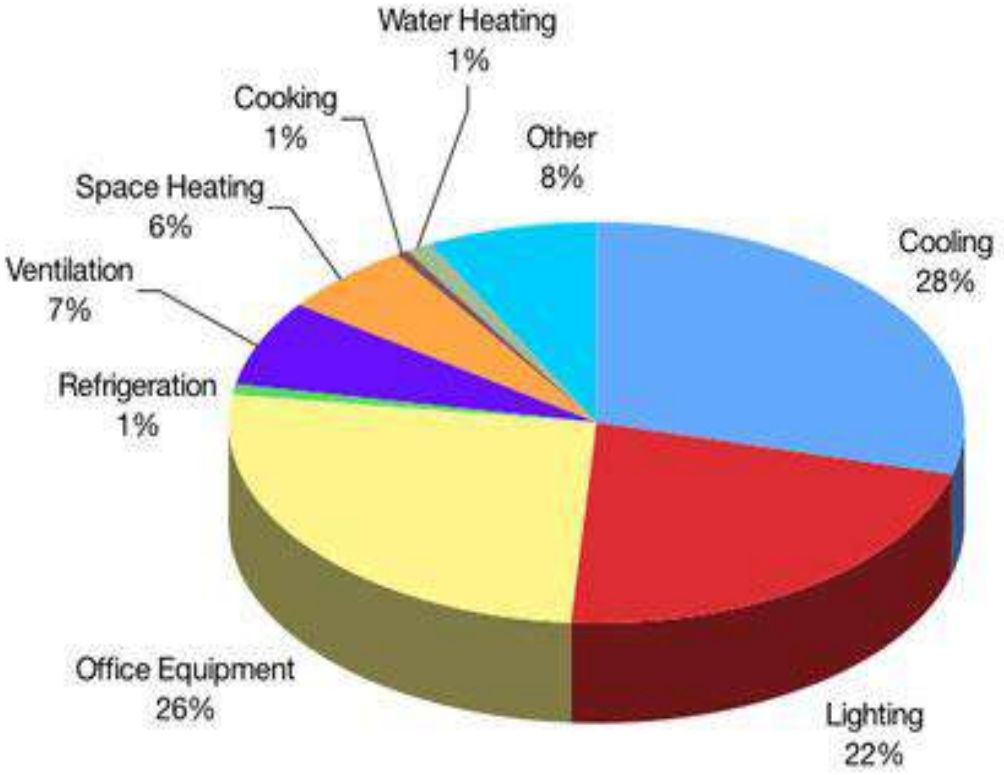
Replacement with efficient and properly sized systems

Natural Hanging

EXPECTED SAVINGS

YEHANS INTERNATIONAL

The recommendations can immediately reduce energy costs by **5% -15%** using zero or low cost solutions



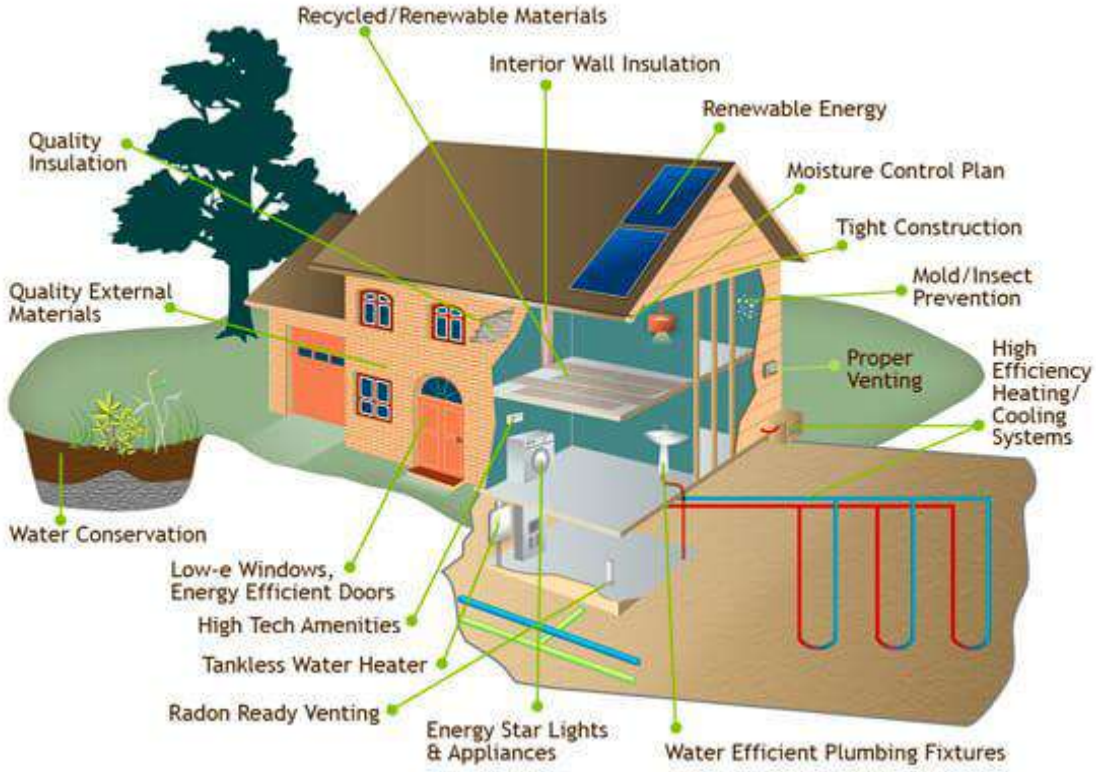
Savings of **30% -50%** (or more) can be achieved by adopting more committed solutions.

STEP 5 : ENERGY AUDIT REPORT

YEHANS INTERNATIONAL

Summary of findings from data analysis and recommendations:

- ❑ Description of the work involved in applying each implementation measure
- ❑ Cost of implementing each recommendation
- ❑ Annual energy and cost savings for each recommendation
- ❑ Cost/benefit analysis: payback period



STEP 6: PRESENTATION OF FINDINGS & RECOMMENDATIONS TO THE CUSTOMER

YEHANS INTERNATIONAL

Different investment range

- ❑ Zero cost investment measures (implementable by customer).
- ❑ Low to medium cost investment measures
- ❑ High cost investment measures

With different payback periods

- ❑ Short : few months
- ❑ Medium: 2-3 years
- ❑ Long: 5 years or more

All Findings and recommendations included in the report will be presented by Yehans International energy audit staff

STEP 7: IMPLEMENTATION OF SOLUTIONS

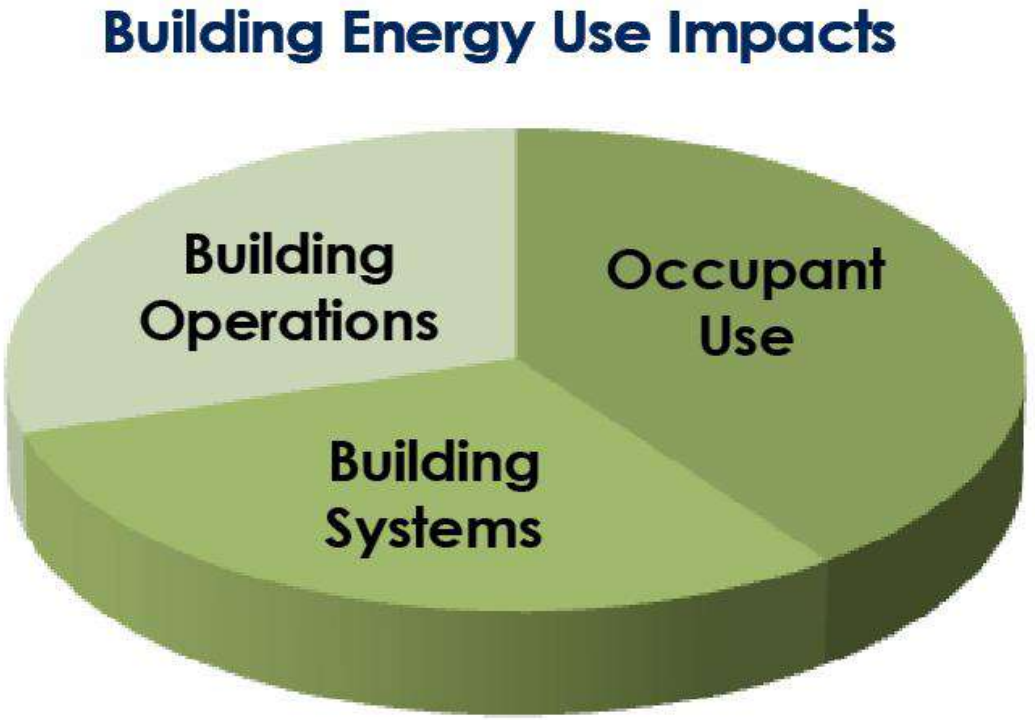
YEHANS INTERNATIONAL

This Process will start after a new contract agreement has been signed and will be based on the customer's decision of which solutions to implement

- ✓ Maintenance, adjustment and upgrading of existing hardware for better energy efficiency
- ✓ Installation of new energy efficient hardware
- ✓ Behavior training to all levels of staff
- ✓ Implementation of an energy efficiency policy
- ✓ Hardware monitoring
- ✓ Work organization set up

STEP 8 : USER TRAINING

- ✓ Energy efficiency awareness sessions
- ✓ Technical use of new hardware implemented to all levels of staff
- ✓ Technical use of energy monitoring devices to monitoring staff
- ✓ Environmental impact awareness sessions



STEP 9: CERTIFICATION

YEHANS INTERNATIONAL

After successful completion of our Energy Savings and Audit Program Yehans International will issue you **a standard Certificate** to certify that your company building meets **International Energy Efficiency Building standards .**

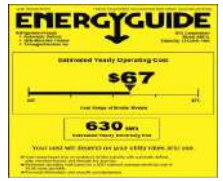
The Certification process to be conducted by Yehans International Energy Efficiency Professional as an independent body.

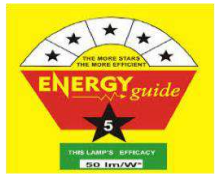
BENEFITS FOR COMMERCIAL BUILDING

- ❑ Completion of the Entire Energy Certification Program increases your building Value and evaluation
- ❑ It attracts International Corporate Bodies to utilize your services or Building as the best Choice
- ❑ It saves you money overall in a very short term period
- ❑ By becoming more **energy efficient, commercial building** owners and its business occupants can increase profits, reduce operating expenses, increase **property** asset value, and stretch operating budgets much further.

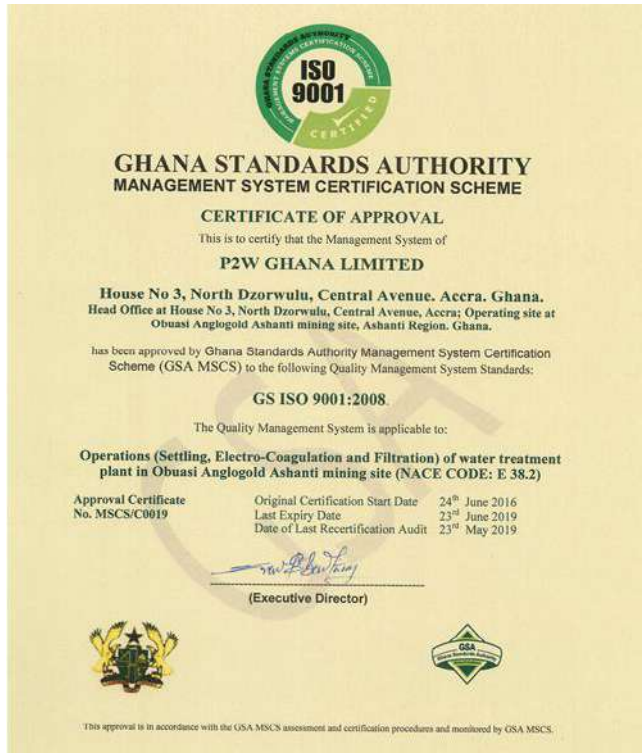
BENEFITS FOR RESIDENTIAL HOME OWNERS

An **energy efficiency** building effectively controls the flow of air, heat and moisture through the building. Plus **energy efficient** buildings use less **energy** and cost less to operate and produce fewer greenhouse gasses, which is good for you and the environment.





GHANA STANDARDS AUTHORITY



LOCATION : 75 Boundary Road, East Legon, Accra | TELEPHONE : +233 302 51 2525 | EMAIL : info@yehansinternational.com | WEBSITE : www.yehansinternational.com

STEP 10 : MONITORING & PERFORMANCE EVALUATION

- ❑ Installation of energy monitoring devices
- ❑ Setting up of an organization to monitor energy consumption in the premises
- ❑ Training of energy monitoring staff
- ❑ Regular evaluation of results achieved compared to set targets

YEHANS INTERNATIONAL

THANK YOU.

FREE TO CONTACT US FOR MORE DETAILS OR TO ARRANGE A MEETING