Energy Efficiency: Commercial and Industrial Applications

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According to the World Economic Forum: 62.5% of the population of sub-Saharan Africa do not have access to electricity.

Power Africa Estimated in 2017 that the current Electricity access in:

Benin = 29%
Ghana = 83%

Factors Contributing to these Challenges according to the World Bank:
• Low Generational Capacity
• Poor Utility Management
• High Cost of Electricity
• “Energy Efficiency!”
How and where does a commercial building use energy?

<table>
<thead>
<tr>
<th>Energy Usage</th>
<th>Office</th>
<th>Retail</th>
<th>Restaurant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling/Heating</td>
<td>58</td>
<td>54</td>
<td>41</td>
</tr>
<tr>
<td>Lighting</td>
<td>30</td>
<td>36</td>
<td>18</td>
</tr>
<tr>
<td>Domestic Hot Water</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Refrigeration</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Cooking</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
</tbody>
</table>
Energy Efficiency for Commercial and Industrial Facilities

1. Energy Audits
   - The audit process starts by collecting information about the facility’s operation and about its past record of utility bills.
   - This data is then analyzed to get a picture of how the facility uses energy, as well as to help the auditor learn what areas to examine to reduce energy costs.

2. Energy Conservation Measures (ECM’s)
   - ECM’s are identified and evaluated to determine their benefits and their cost effectiveness.
   - These ECM’s are assessed in terms of their cost and benefits, and an economic comparison is made to rank the various ECM’s.

   - Finally, an energy action plan is created where certain ECM’s are selected for implementation.
Energy Audits

1. Obtain Utility History - Electric and other sources (gas, generators, etc)
2. Estimate Cooling and Heating loads
3. Site visit
4. Interview with facilities manager or equivalent person
5. Survey of Facility
   - Lighting
   - Cooling and Heating
   - Motors and Drives
   - Building Envelope
6. Analyze Data and perform calculations
7. Preparation of report
8. Present to stakeholders
The RIFE Approach

Energy Conservation Measures:

- Benchmarking
- Building Energy Audits
- Energy measurement (Smart tile)
- Energy Efficient Retrofits
  - Lighting
  - Transformers
  - VFDs
  - Plug Loads
  - Building Envelope
  - Kitchen Hood Ventilation Systems
- Energy Storage/ Battery Technology
Energy Action Plan – Our Projects

- Energy Efficient Lighting - US
- Energy Efficient Transformer - US
- Shopping Center - Ghana
- Food Processing Plant - Ghana
- University Campus - Ghana
Our Commercial and Industrial clients:

- Government Agencies
- Hospitality
- Retail
- Industrial
- Educational Institutions
Benefits of Energy Efficiency

- Energy savings
- Environmental Sustainability
- Asset Values
- Macro Economic Development
- Industrial Productivity
- Energy Access
- Energy Security
- Energy Prices
- Public Budgets
- Disposable Income
- Local air pollution
- Health and Wellbeing
- Health and Wellbeing
- Energy Access
- Energy Security
QUESTIONS?

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