ENERGY MANAGEMENT ACTION NETWORK FOR INDUSTRIAL EFFICIENCY (EMAK)

Session 1 – Showcases Established in Brazil (EnMs and EC)

Established Public and Private Network / B+P EE

Gustavo Fontenele (MDIC)

São Paulo, November 21st 2018 (EMAK9)
Session 1 – Showcases Established in Brazil

1) Established Public and Private Network (remarks).

2) B+P EE.
1) Established Public and Private Network (remarks)
2) Brazil More Productive Energy Efficiency (B+P EE)

“Brasil Mais Produtivo Eficiência Energética (B+P EE)”
The industrial sector is responsible for more than a third of worldwide energy consumption (IEA, 2015) and for 34% of the total energy consumption in Brazil (Energy Research Agency, 2015).

In discreet manufacturing companies, the costs related to energy consumption are from 6% to 8% of the total, and may reach 20% (HUIJBREGTS et al., 2010).
### Methodology 140h

- **Identification of final use and electrical charge (8h)**
- **Data collection and analyses (88h)**
- **Implementation and Monitoring (40h)**
- **Proposal of work plan (4h)**

### Areas of Action

- Tariff Analysis
- Lighting System
- Drive System
- Refrigeration and Thermal
- Compressed Air

### Cost: R$ 21 mil / USD 5,600

USD 1,120 (Company Counterpart) + USD 4,480 (B+P)
R$ 4,8 mil (Contrapartida da Empresa) + R$ 16,8 mil (B+P)
PILOT PROGRAM

PILOT IN 48 COMPANIES

SECTORS

Red Ceramic (8)
Metal-mechanic (8)
Plastics (Transformed) Products (9)
Textile (12)
Food (5)
Cosmetics (6)

INDICATORS

Average Reduction of Energy Consumption (without investments)
26.43%

Annual Reduction of Energy Consumption (without investments)
U$ 12,779 mil

Average Payback (R$ 21 mil / USD 5,600)
4.71 months

STATES

BA, CE, ES, GO, MG, PB, SC, RS
### RESULTS PER SECTOR

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>Total Energy Consumption Reduction (MWh/year) without investment</th>
<th>Total Energy Consumption Reduction (MWh/year) with investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD</td>
<td>182</td>
<td>251</td>
</tr>
<tr>
<td>CERAMIC</td>
<td>5,724</td>
<td>1,752</td>
</tr>
<tr>
<td>COSMETICS</td>
<td>280</td>
<td>223</td>
</tr>
<tr>
<td>METAL-MECHANIC</td>
<td>585</td>
<td>804</td>
</tr>
<tr>
<td>PLASTICS (TRANSFORMED)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRODUCTS</td>
<td>196</td>
<td>175.4</td>
</tr>
<tr>
<td>TEXTILE</td>
<td>5,137</td>
<td>3,217</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12,104*</td>
<td>6,422.40</td>
</tr>
</tbody>
</table>

*Energy Savings is equivalent to 6,724 houses (average per house 1.8 MWh/year)*
Case 1 – Sector: Metal-mechanic

Targets
- Lighting Systems
- Compressed Air Systems

Main Actions
- Elimination of leakages in the compressed air network;
- Change of the Power Energy Contract;
- Deactivation of one of the three substations at the company (oversizing);

Results/Achievements
- Reduction of 55.9%
- Economy per year: 170.23 MWh/a
- R$ 127,032.81 (USD 33,875.42)
- Program Payback: 2 months
Case 2 – Sector: Cosmetics

Targets
- Lighting Systems
- Drive Systems
- Refrigeration Systems
- Compressed Air Systems

Main Actions
- Deactivation of 1 power generator at peak hour;
- Change on the compressors operational systems;
- Change on the chiller operational system (water cooler for the productive process);

Results/Achievements
- Reduction of 65.4% 79.43 MWh/year
- Economy per year (USD 5,609.33) R$ 21,035.00
- Program Payback 12 months
300 companies
Beginning of the consultancy on September, 2018

<table>
<thead>
<tr>
<th>CNAEs PRIORITIZED</th>
<th>Foods and Beverages</th>
<th>Textile</th>
<th>Plastic (Transformed) Products</th>
<th>Red Ceramic</th>
<th>Cosmetics</th>
<th>Metal-mechanic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80</td>
<td>31</td>
<td>58</td>
<td>60</td>
<td>18</td>
<td>53</td>
</tr>
</tbody>
</table>
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