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El saber de mis hijos hará mi grandeza

Energy Efficiency in Maquiladoras of electronic components: A Cleaner Production approach

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Academic Work

Background

- Up to two thirds of the world's energy resources are used by the industrial sector
- Energy consumption is predicted to increase 1.6 % annually until 2030
- Poor energy management, particularly in developing countries, results in unjustified CO2 and other green house gases' emission
- Poor infrastructure and lax law compliance

Maquiladoras

- Assembly and manufacturing plants
- Electric and electronic components
- 6 Maquiladoras located in two different cities, in the US-Mexico boarder region
- They differ in size, number of employees and managerial structure
- Environment temperature

Joint-Objectives

- To help reduce CO2 emissions
- To Help strengthen CSR
- To Increase cost reductions

Methodology

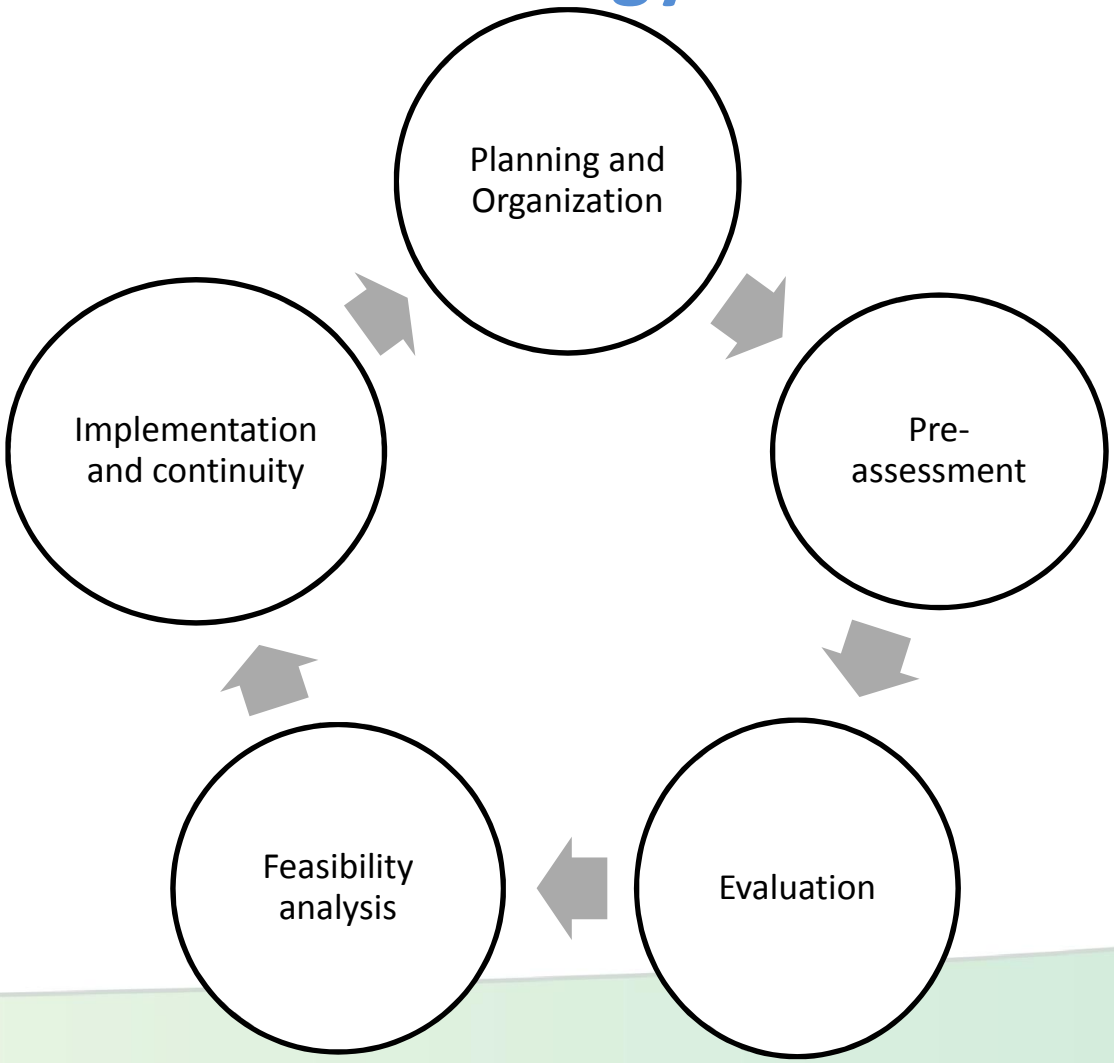

Figura 1. Esquema metodológico del manual Producción más limpia – Eficiencia Energética (UNEP, 2004).

Action plan

- ✓ Interviews
- ✓ On-site visits and walk-throughs
- ✓ Interventions
- ✓ Implementation
- ✓ Improvement

Research questions

- *Within a system's approach, what areas in the participating maquiladoras have the most impact on energy consumption?*
- *Can competitive advantages be developed through efficient energy management in the participating maquiladoras?*

Main areas of concern

- Heating, ventilation and air conditioning(HVAC)
- Pneumatic systems
- Electric engines
- Industrial ovens and exhausts
- Lighting

Challenges

- Investment
- Employee awareness
- Unresponsive management
- Uneven or disarticulate objectives
- Pay-back periods

Results

- Energy consumption
- HVAC
- Motorized systems
- Pneumatic systems
- Strong relation with varying tempertures

Results

- Policies greatly differs depending on size and corporate structure.
- Customer's requirements as a driver for the adoption of newer technology.
- Willingness to include energy-efficient policies in their vision statement.

Results

- Up to 40% savings on energy costs
- Improvement of overall quality and working environment
- Uneven employee and management awareness
- Lack of follow-up directives when energy management procedures are in place.
- Different aspects of energy management seen as isolated elements, rather than as a compound.

Conclusions and Recommendations

- Newer technology on lighting.
- Replace pneumatic devices by electric ones, whenever possible.
- Isolate high-temperature areas
- Use exhaust heat as input for other processes.
- Develop stronger energy management policies

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Obrigado