

Eco-design and LCA



Component
École Nationale
Supérieure
d'Électrotechnique
d'Électronique

In brief

- **Amety's Code:** N9EE34C
- **Open to exchange students:** Yes

Presentation

Objectives

- Integrate an eco-design approach into the design of energy systems;
 - Identify the steps in the Life Cycle Assessment methodology;
 - Be able to analyze and critique a life cycle assessment that has already been carried out;
- Know how to apply the life cycle assessment method to the study of an energy system.
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Description

Introduction: from life cycle assessment to LCA, ISO 14040 standards

- General principle of LCA

- Presentation of the four stages of LCA:

1-Definition of system objectives :

Purpose and scope of the study ;

Product or system function;

Functional unit and reference flows;

Process tree ;

Application examples;

2- Emissions inventories and extractions

Inventory database (e.g. EcolInvent...)

Example of extractions and emissions inventory (alumina production...)

Extraction and emissions inventory calculation method

Energy balance and CO2 balance

3- Environmental impact analysis

Method for interpreting inventory data

Intermediate characterization: calculation of the intermediate impact score

Damage characterization: calculation of damage characterization score

4- Interpretation

- LCA methodology: iterative approach (preliminary assessment or screening, detailed analysis), manual calculations, summary presentation of existing calculation software.

Program and content of the Design Office :

Carrying out a lifecycle analysis of photovoltaic solar panels, using SimaPro software

Presentation of results in the form of a report and oral presentation.