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FRAUNHOFER CENTER FOR ADVANCED WATER, ENERGY AND RESOURCE MANAGEMENT – AWAM

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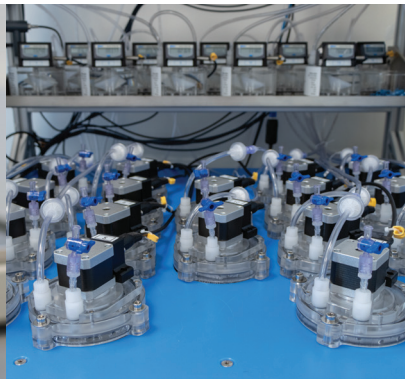

1 *Life Cycle assessment process.*

2 *Collection and processing of grape pomace for biogas production.*

LIFE CYCLE ASSESSMENT FOR WATER, ENERGY AND RESOURCE VALORIZATION TECHNOLOGIES

Background

Life Cycle Assessment (LCA) is a methodology for assessing environmental impacts associated with all stages of a product, process, or service. It involves evaluating the entire life cycle from raw material extraction and processing through manufacturing, distribution, use, and finally, recycling or disposal of the materials. LCA provides a holistic view of a product's environmental profile by considering resource use, human health, and ecological consequences. Its goal is to document and improve the overall environmental impact.

Solution

Fraunhofer Portugal AWAM conducts life cycle assessment following DIN EN ISO 14040 as a tool for the development, optimisation and evaluation of a wide range of processes, products and process engineering systems. Environmental effects can thus be quantified and compared. We use the Open LCA software, which accesses the world's leading life cycle assessment databases, e.g., EcoInvent. In addition, we are constantly creating, expanding and evaluating our databases and experiences. In addition to the application of linear models of standardised life cycle assessment, the problem-specific, flexibly adaptable assessment of recycling processes is one of our fundamental competences.

Services

- Preparation of life cycle assessments in accordance with DIN EN ISO 14040 for processes, systems and products;
- Greenhouse gases balancing and cost calculation for sub-processes or complete product systems;
- Preparation of balance sheet for recycling processes;
- Accompanying life cycle assessment of R&D projects and optimisation tasks for processes and systems (material and energy flows, cost analysis).

These competences can be applied, for example, in the following areas:

- Biogas production and digestate treatment process chains;
- Material recycling in industrial processes, e.g., ceramics, fibers, wood, cork, etc.;
- Raw material recovery from sewage sludge and other waste streams.

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