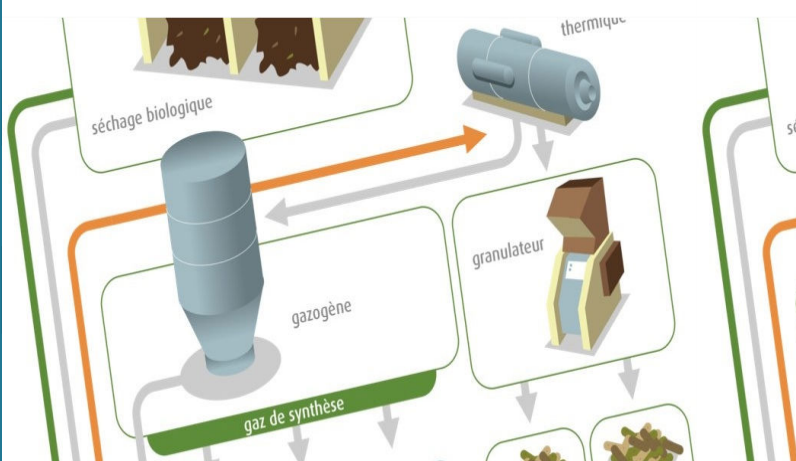


Valortech

Developing an innovative polygeneration energy concept by integrating biomass gasification, pellet production and combined heat and power generation.



Inspiration

The rising worldwide demand for primary energy and its environmental consequences is a topic of great interest to the European Union Member States, which are being called on to take measures to prevent a possible energy crisis. These efforts are mainly focused on research and development in renewable energy technologies that are scalable, sustainable and profitable.

Biomass is well known for being the only sustainable source of organic carbon currently available as an alternative to conventional fossil fuels (i.e. crude oil, coal, natural gas). The use of renewable biomass for the production of energy, especially from waste streams, is thus key for sustainable development. Biomass gasification enables the resource-efficient production of energy and co-products in poly-generation systems.

Following this concept, Valortech focuses on using waste products with low heating value such as sewage sludge that, mixed with wood chips or comparable green waste, can generate useful energy (i.e. heat and electricity) as well as combustibles through the production of industrial pellets. The conversion of clarification sludge from waste water treatment plants mixed with green organic waste into energy through gasification is an innovative concept.

Innovation

Within the project, a demonstration has been installed in Diekirch, Luxembourg. LIST's Environmental Research and Innovation (ERIN) department contributes scientific support to Valortech to reduce gas emissions in compliance with European and national law. Additionally, drawing on its experience and expertise in the area of biomass, gained through past projects RUBIN, LUXCYCLE, and VALORBUES, as well as the ongoing project LUCAS, ERIN is responsible for Valortech's energy assessment, which includes an energy and exergy analysis of the overall process.

Impact

The Valortech project has great potential to offer a concept of polygeneration that is innovative and competitive at international level by integrating biomass gasification, pellet production and combined heat and power generation. The project will produce state of the art data, contributing to the global discussion on energy management.

Locally, Valortech fits into the national strategy to promote eco-technologies and to develop expertise in different areas of engineering such as waste management. The project will produce a high level of scientific output, which has the potential to resonate within the scientific community.

Partners

Soil-Concept (LU) , ENERGOLUX (LU) , L.E.E. Sàrl (LU) , Gradel (LU) , University of Luxembourg (LU)

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