Integrated biogas production from selected municipal waste materials

Expected project CAPEX: 8'500’00 €

Mandating Authority: Banja Luka municipal authorities

Project Type: Biogas

Summary

This project utilizes segregated, selected and pre-treated biomass waste materials from municipal collection to provide renewable energy to the municipality of Banka Luka in Bosnia and Herzegovina. The project will further establish a bio-methane based regional transport capacity, thereby reducing energy costs considerably.

Location and population

City of Banja Luka, Bosnia 300’000 inh.

Social and environmental impact

Instead of constructing a new landfill, a waste-to-energy application based on advanced anaerobic fermentation will be used. Impacts are: reduction of waste volumes going to landfill; provision of electricity, heat, fertilizer and vehicle fuel; the introduction of bio-methane based CNG as transport fuel; reduction of GHGs; job creation.

Main stakeholders

This project represents an innovative lighthouse project for effective waste management and regional energy production through a closed circle and no emission processing technology in Southeast Europe.

Inlay material separation from the municipal waste streams arriving at the waste management site and pre-treatment through SET biomass crusher. Multi-stage anaerobic fermentation with biogas utilisation for co-generation of electricity and heat, and excess biogas refinery for vehicle utilisation in the form of bio-methane CNG. Involved manufacturers: General Electrics, SET GmbH, Andritz and others.

The expected installed capacity for project phase I will be equivalent of 1,5 MWe/h plus 2 MWth/h from co-generation and excess refined biogas for bio methane CNG vehicle operation. For this anaerobic fermentation project 90,000 tons of segregated and pre-treated substrate per year will be mixed. The substrate will be delivered by the waste collection company and will be screened and separated from the remaining waste substances on a daily basis.

Land identified
Yes

Site access:
☑ Adequate road  ☐ Rail access  ☐ Port facilities

Technology:
Inlay material separation from the municipal waste streams arriving at the waste management site and pre-treatment through SET biomass crusher. Multi-stage anaerobic fermentation with biogas utilisation for co-generation of electricity and heat, and excess biogas refinery for vehicle utilisation in the form of bio-methane CNG. Involved manufacturers: General Electrics, SET GmbH, Andritz and others.

Waste stream data
Yes

STAGE 1: Concept Development, Site identification

Expected capacity (Input-Output)

STAGE 2: Pre-Feasibility Studies

Pre-feasibility study:  Yes

STAGE 3: Feasibility Studies

Feasibility study:  Under progress

STAGE 4: Permitting / Financing / Contracts

Land concession signed
Yes

Building permits signed
Yes

Environmental impact study
Under Progress

Identified sources of fundings
Čistoća a. d. Banja Luka - Osnovna djelatnost Komunalno-uslužnog preduzeća as the waste collecting enterprise; JP DEP-OT Regionalna deponija Banja Luka - as the operator of the regional landfill, General Electrics- Clark Energy, ResponsAbility, LDF

STAGE 5: Engineering / Construction / Commercial Operation

Engineering, Procurement and Construction Contractor
SET is prepared to take overall responsibility for the tendering, selection process and oversight of the engineering, procurement and construction as implementing partner and one-stop-shop for the project SPV.

Operation and Maintenance Contractor
SET is prepared to act as the general operator and maintenance contractor for the SPV. General Electrics – Clark Energy will provide for maintenance of the co-generation units of the project phases.

Comments
This project represents an innovative lighthouse project for effective waste management and regional energy production through a closed circle and no emission processing technology in Southeast Europe.