

Waste treatment and biogas generation plant



Client

Agrobusiness

Facts

Period

2013

Project Country

Brazil

UF

RS

GEOKLOCK was retained by a company in the services segment to develop the basic engineering design for a wastewater and organic solid waste treatment plant.

Once implemented, the designed plant will digest biomass composed mostly of grape pomace and vegetables and greens wastes. Additionally, the system will also receive the organic fraction of urban solid wastes, as well as bioliquids to pretreat [condicionar] the biomass to be digested.

The biomethane to be generated will have the following characteristics:

- Methane: 55–65 Vol.%;
- Carbon dioxide: 30–45 Vol.%;
- Water: 0–5 Vol. %;
- Nitrogen: < 1 Vol.%;
- Hydrogen sulfide: < 2000 ppm.

Once produced, the gas will be compressed and distributed through the Rio Grande do Sul state natural gas pipeline system.

The primary services developed by GEOKLOCK for this project are described next:

- Dispersion study to assess the effects of H₂ emission. The study suggests that no odors will be generated that will disturb offsite areas. The simulation used the Effects 9 model;
- Mass balance for the wastewater and waste treatment plant site;
- Process specifications [Descritivo de processo], including the detailed description of the biodigestion system, emergency flare, biogas purification, desulfurization, monitoring and control of biogas quality after purification (chromatography), odorization system;
- Process flow diagram;
- P&ID;
- General layout;
- General setup and layout of equipment;
- Fire hydrants system;
- One-line power diagrams, command and automation;
- Protection against atmospheric discharges;
- Description of utilities required for plant operation;
- Lists of equipment, instruments, lines and electrical, civil and mechanical materials;
- Capital expenditure (CAPEX) and operational expenditure (OPEX) estimates;
- Implementation schedule.

After conclusion of basic engineering, the design was submitted to the client. Detailing and implementation are still being discussed with the client.

Contact Persons



Wagner Pisciotano
wagner.pisciotano@ebpbrasil.com.
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