



## GENÉTICA ENVIRONMENTAL TECHNOLOGIES

### REQUESTING DATA

<b>Client:</b> Genética Environmental Technologies		
<b>Address:</b> Dom Carlos Eduardo Sabóia Bandeira de Melo Street, 2304 D		
<b>ZIP CODE:</b> 89.806-235	<b>CNPJ/CPF:</b> 07.699.054/0002-17	<b>IE:</b> -
<b>City:</b> Chapecó	<b>State:</b> SC	<b>Phone:</b> (49) 3331-2636

### SAMPLE DATA

<b>Points identification:</b> Anaerobic reactor – Raw biogas	
<b>Responsible for collecting:</b> Chemical Engineering Ivan Sganderla	<b>Responsible for analysis:</b> Chemical Engineering Gabriela Longaretti
<b>Collection date:</b> ---	<b>Analysis date:</b> ---
<b>Observations:</b> Atmospherics conditions: Good, sunny weather. Flare situation: Off.	

### Analytic results – Biogas analysis<sup>1</sup>

Test	Raw biogas	Method
Methane (CH <sub>4</sub> )	82.6 % ± 0.04	By dual wavelength infrared cell with reference channel
Dioxide carbon (CO <sub>2</sub> )	5.2 % ± 0.09	
Oxygen (O <sub>2</sub> )	0.4 % ± 0.04	By internal electrochemical cell
Balance <sup>2</sup>	11.8 %	By dual wavelength infrared cell with reference channel
Monoxide carbon (CO)	1 ppm	By internal electrochemical cell
Hydrogen sulfide gas (H <sub>2</sub> S)	440 ppm	
Hydrogen (H <sub>2</sub> )	1 ppm	
Relative Humidity (RH)	95.2 %	Polymer based capacitive sensor
Absolute Humidity (Abs H)	40.2 g/m <sup>3</sup>	Polymer based capacitive sensor
Temperature	38.2 °C	Thermocouple
Velocity	1.0 m/s	Diaphragm sensor
Flow rate	28.8 m <sup>3</sup> /h	Diaphragm sensor

**Note 1:** Specific readings, can be variations according to the flow stream and reactor inlet charge.

**Note 2:** The item *Balance* is a group of another's gases (for example N<sub>2</sub> and NH<sub>3</sub>) that cannot be reading separately detected for the equipment.

#### Calibration certificate of equipment:

Calibration certificate: N° G500539\_5/2853.

Last calibration date: 04<sup>th</sup> February, 2016.

All concentrations are molars:

As received, registers readings of CH<sub>4</sub>, CO<sub>2</sub>:

32.7 °C/90.9 °F.

As received, register reading of CO<sub>2</sub>

23.0 °C/73.4 °F.

Barometric pressure:

27.21 "Hg.

Ivan Bovi Sganderla – Chemical Engineering CRQ 13301446