

Diffuse Degassing  
continuous monitoring systems

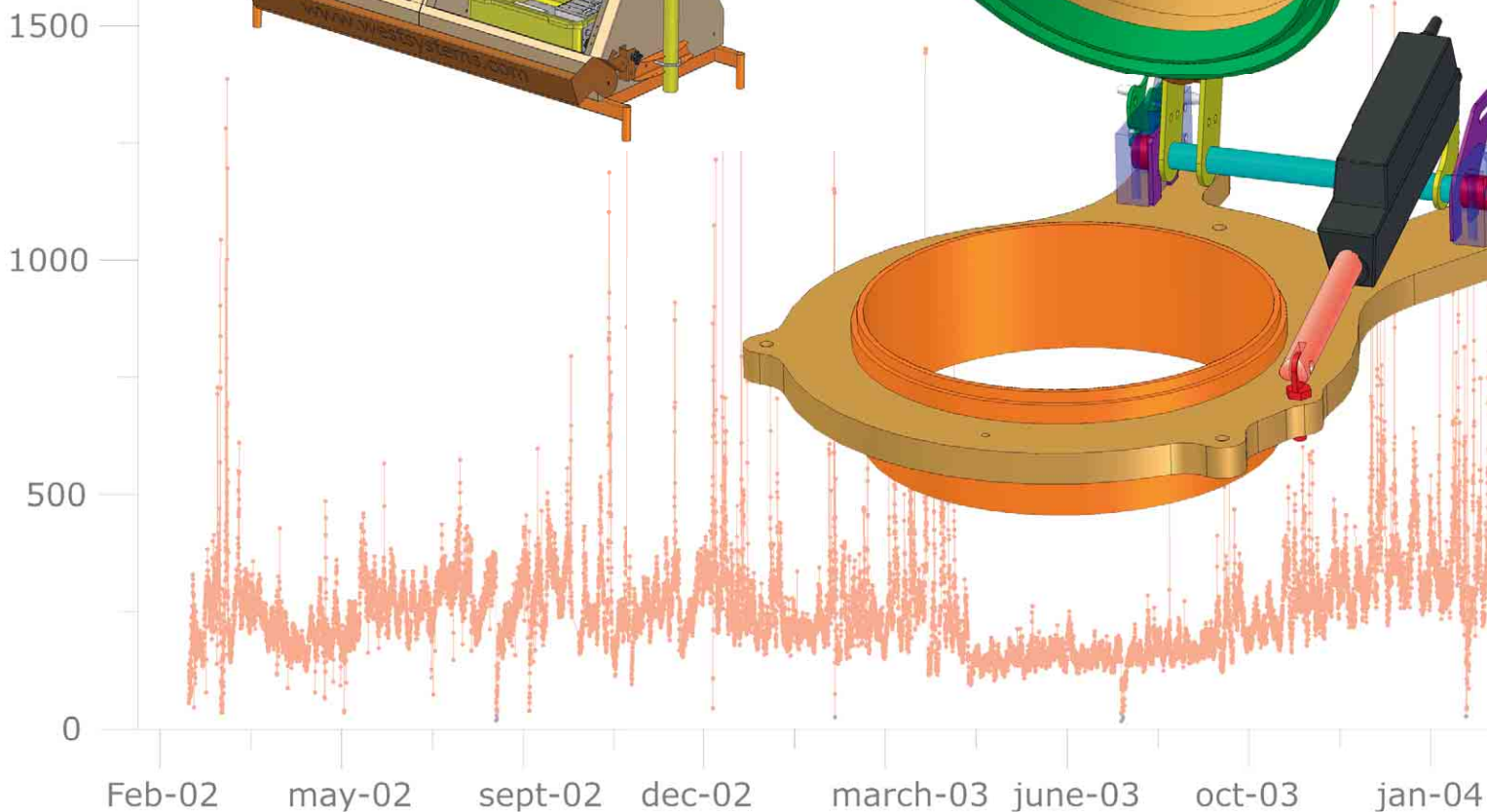
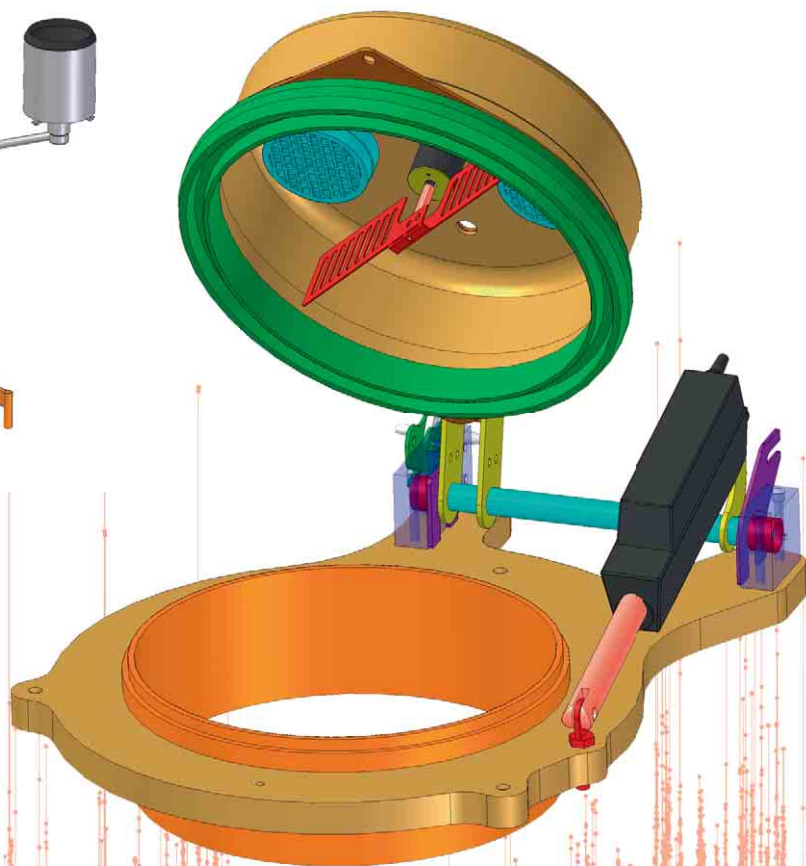
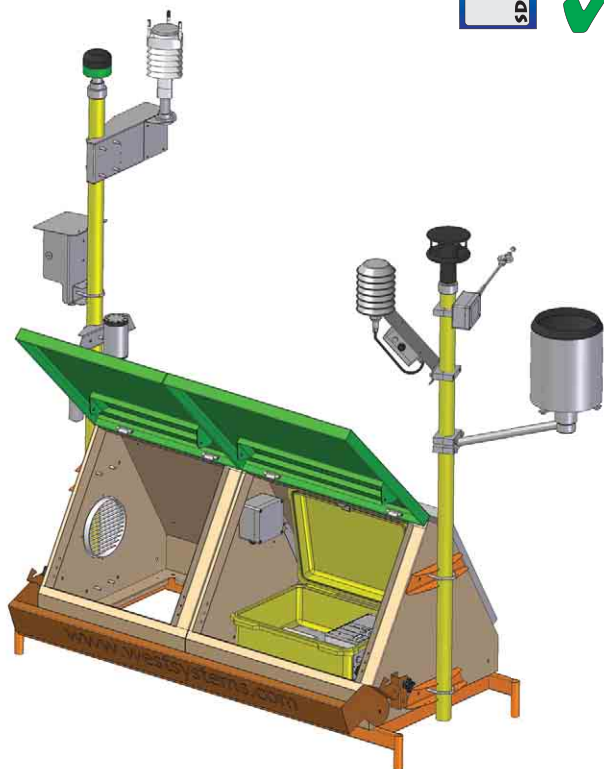
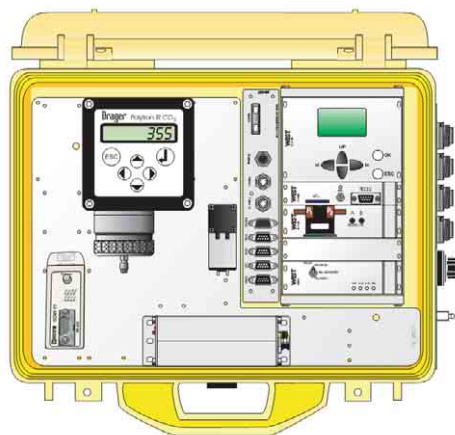
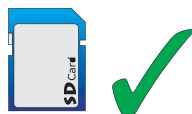


# Diffuse Degassing continuous monitoring systems

## The station is able to measure:

- Carbon dioxide diffuse flux from soil by means of the accumulation chamber method.
- [Optionally]: Hydrogen Sulfide diffuse flux by means of the accumulation chamber method.
- Air temperature
- Soil temperature
- Wind speed and direction
- Relative humidity in air
- Soil water content
- Barometric pressure
- Gas flow in the sampling line
- Rain fall

This is a completely automatic station, power supplied with a solar cell and backup battery, which performs the measurements cycle with a configurable frequency (default every hour).



## CM.HWR8 SoilGas station

<b>CPU</b>	a custom programmed microcontroller that manages the functioning of the station, and the communications with the master center. The CPU stores the data into a removable SD memory (1 GB storage capacity).
<b>Display</b>	the station is equipped with a LCD monochromatic display for configuration and testing of the sensors.
<b>Acquisition system</b>	analog to digital conversion board with 8 analog inputs;
<b>Flowmeter AWM3300</b>	This sensor measures the quantity of gas mixture that is pumped into the measurement line. It's useful to know the pump and filters status.
<b>Barometric pressure sensor: Vaisala Barocap PTB110</b>	Temperature compensation. Measurements range 600-1100 hPa Linearity and hysteresis : $\pm 0.3$ hPa
<b>Power requirements</b>	Low power consumption , less than 5 mA @ 12 Volts in standby
<b>Accumulation chamber</b>	Aluminum accumulation chamber with internal mixing device; Chamber footprint $\sim 700$ cm <sup>2</sup>

### CO<sub>2</sub> detector: Drager Polytron IR CO<sub>2</sub>

CO<sub>2</sub> flux measurement range:

1 to 350 moles/m<sup>2</sup>·day precision  $\pm 10\%$

350 to 600 moles/m<sup>2</sup>·day precision  $\pm 25\%$

600 to 1500 moles/m<sup>2</sup>·day precision  $\pm 25\%$

### Environmental parameters sensors

Soil temperature sensor: Temperature Pt100 probe 0 ~ 200 °C

Soil water content by using a time Domain reflectometry probe;

Range 5- 50% (Volume of water / Volume of Soil)%

Sonic Wind speed and direction gauge;

Measurements range 0..60 m/sec. 0-360°

Thermohygrometer with double antiradiation protection.

Relative humidity range : 10~98%

Temperature range : -30~70°C

Other detectors are available on request.

### Power supply

The station is supplied by solar panels.

During night and in periods of low solar radiation the power is supplied by means of a buffered battery. To avoid damage to the battery, a dedicated circuit allows the station to turn off when there is low battery power.

### Shelter

The enclosure for the station is made in AISI316 steel, and supports the meteo sensors and the solar cells power supply system.

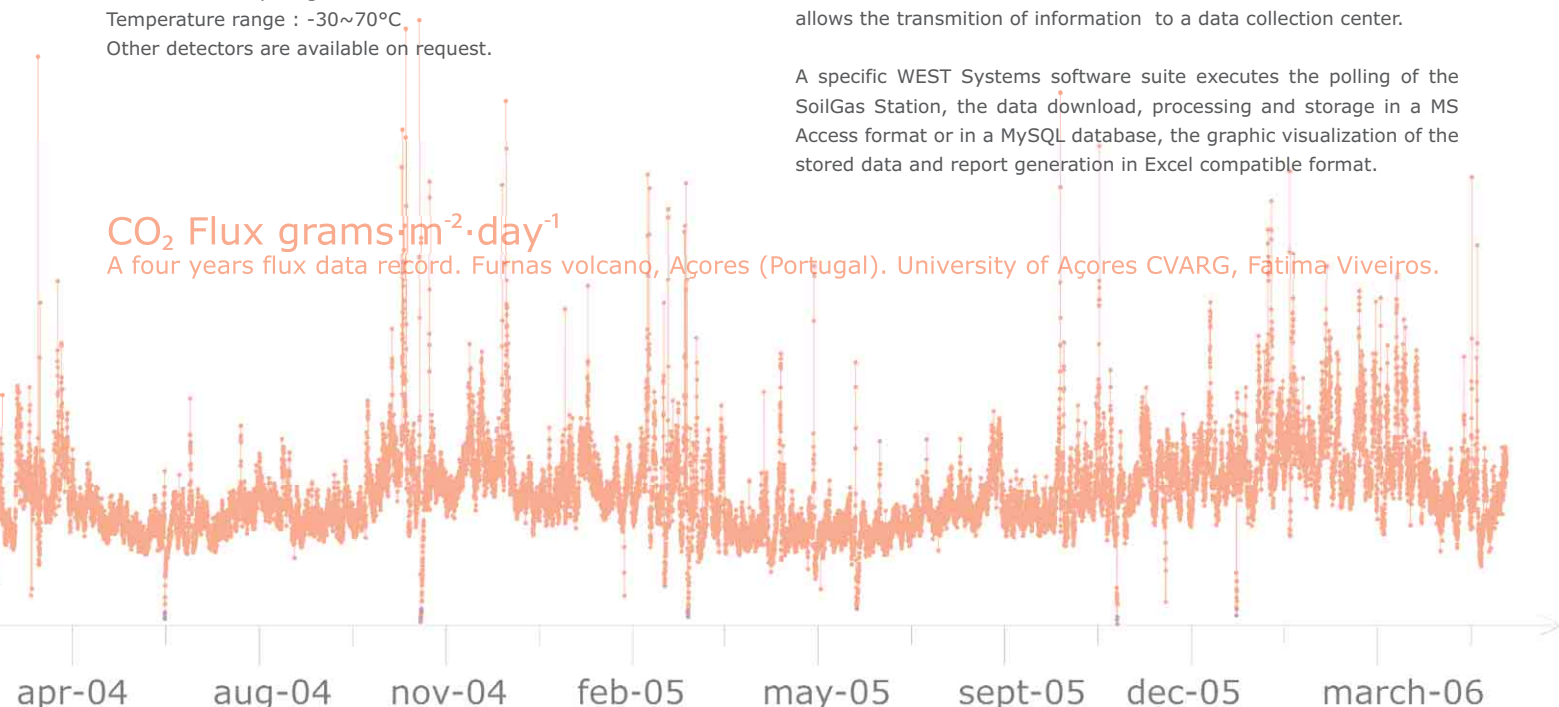
### Data acquisition and processing

The station is equipped with a datalogger for acquisition and storage of the monitored parameters. A radio modem, or a GSM/GPRS modem, allows the transmission of information to a data collection center.

A specific WEST Systems software suite executes the polling of the SoilGas Station, the data download, processing and storage in a MS Access format or in a MySQL database, the graphic visualization of the stored data and report generation in Excel compatible format.

## CO<sub>2</sub> Flux grams·m<sup>-2</sup>·day<sup>-1</sup>

A four years flux data record. Furnas volcano, Açores (Portugal). University of Açores CVARG, Fatima Viveiros.





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## Local representative

