

CO₂ S-Pot

Diffuse flux continuous monitoring unit

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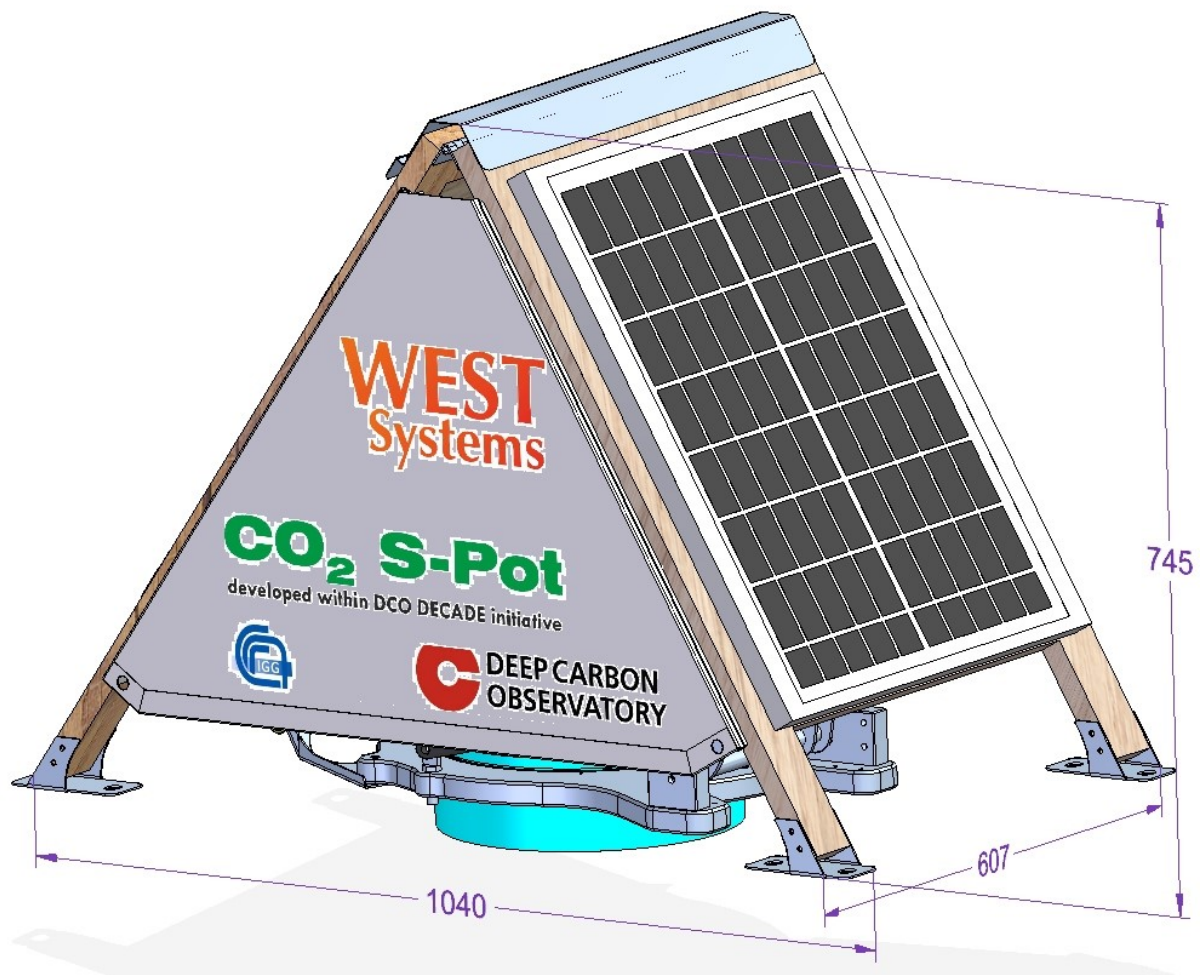
WEST
Systems

CO₂ S-Pot Diffuse flux continuous monitoring unit

CO₂-S-Pot is an instrument for the continuous monitoring of diffuse soil flux emissions in volcanic and geothermal areas. The unit can be used both as a standalone unit to record short to medium term data in a single point or as part of a network of units for long term continuous monitoring. In this second case we advise to complete the network by adding one or two "standard" SoilGas-CM continuous monitoring devices to complete the information with meteorological parameters.

CO₂-S-Pot is able to measure:

- Carbon dioxide diffuse flux from soil by applying the accumulation chamber method
- Barometric pressure
- Soil temperature and water content
- Optionally hydrogen sulfide flux from soil
- CO₂-S-Pot is a completely automatic unit, power supplied by a solar cell and backup battery (12V 7Ah lead battery) which performs the measurement cycles with a configurable frequency (by default every hour)
- Automatic aluminum accumulation chamber without mixing device. Chamber surface: 700 cm²
- Bluetooth programmable, "CO₂-S-Pot" app on Google Play Store
- Dimensions: Length 104 cm Width 61 cm Depth 75 cm
- Total weight 32 Kg



CO₂ S-Pot Specifications

Carbon dioxide flux measurement

The carbon dioxide is measured by a NDIR (Non-Dispersive Infrared) detector, placed inside the chamber, protected by a large P3 filter to avoid dust contamination of the detector. The system is equipped with 2 interchangeable CO₂ detectors: (0 - 5,000 ppm), (0 – 5%). The low range detector enables a more accurate reading when operating in a weak emissions area. On the contrary, the high range detector allows the measurement of high emissions without risking the saturation of the signal.

Flux measurement range: from 1 to 350 $\mu\text{moles/m}^2$ per second (0.1 to 30 moles/m^2 per day):

Detector 0-5,000ppm

Flux measurement range: from 5 to 3500 $\mu\text{moles/m}^2$ per second (0.5 to 500 moles/m^2 per day):

Detector 0-5%

Hydrogen sulfide flux measurement

The H₂S is measured by an electrochemical cell, placed inside the chamber, protected by a large P3 filter to avoid dust contamination of the cell.

Flux measurement range: from 0.03 to 6 $\mu\text{moles/m}^2$ per second (2.5 to 500 millimoles/m² per day): Cell 0-20 ppm

Soil parameters

The system is equipped with a soil probe able to measure temperature, volumetric water content and electrical conductivity, with the following specifications:

	Range	Accuracy
Temperature	-40 to 80°C	± 1°C
Volumetric water content	0 to 100%	± 3%
Electrical conductivity	0 to 23 mS/cm	±5% from 0 to 5 mS/cm ±10% from 5 to 23 mS/cm

Configuration

The system can be configured locally using an Android-based mobile device (tablet or smart-phone), which communicates with the unit using a Bluetooth link. A custom designed app allows the operator to configure the unit and check the proper functioning. Download the “CO₂-S-Pot” app on Google Play Store.

Storage

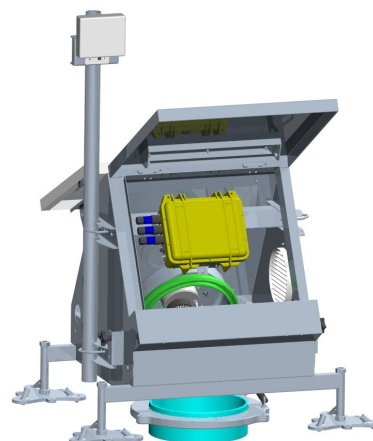
The unit stores the data internally into a SD card. In case of telemetry fault, the data can be imported by manually removing the card.

Telemetry

The unit can be equipped with either an 869 MHz, 2.4 GHz (or 900 MHz) license-free radio with a range in line of sight of 20 miles or GPS/GPRS modem; The telemetry allows remote configuration and to download the data. The type of telemetry must be specified at purchase order time.

Shelter

The CO₂-S-Pot unit can be supplied with light, and inexpensive, wood protection or with a stanley steel AISI-316 shelter for extreme environmental conditions to protect the equipment against the elements and vandalism.



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