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CORRIGENDUM

After telephonic Pre-bid the modified technical specification as per Annexure-VII may please be read as below:

Annexure-VII

Updated specifications of “Portable Photosynthesis System”

Portable Photosynthesis System should be ideal for field or lab work for measurement of Gas exchange. System to be supplied complete with following System Configuration:

Portable Photosynthesis System working on the Principal of NDIR. System Console with at least 512 MB RAM with 8GB Flash Memory /USB for Data storage with high speed Processor: 800 MHz. The system should be Capable of making measurements in less than one minute.

- Display: Sunlight-readable TFT Color LCD Display with full touch screen.
- System should have four Infra-Red Gas Analyzers - Analyzers adjacent to leaf chamber/cuvette connected without any tubing to minimize time delay, fast equilibrium, avoid sorption of CO₂ Gas and H₂O (Water Vapor) through path tubing of sample chamber/leaf chamber to Analyzer.
- The instrument should display graphical and numeric measurement simultaneously in real time measurement.
- Instrument should have self-diagnostic for any error with the measurement and control settings during measurement
- The system should be light weight approx 5-8.5 kg, easy to carry in the field for field studies.
- The standard leaf chamber/cuvette should have measurement area of 6- 9cm². The system should be supplied with Chamber Apertures
- System should have the facility of automatic software control of CO₂, H₂O/RH, Temp.,Light, boundary layer conductance & VPD. The system should have high speed 8000-10,000 RPM or more mixing fan to control boundary layer resistance/conductance.
- System should have Operating temperature range: 0 – 50 °C
- System should have Storage temperature range: 0°C – 50 °C

- System should have high user controlled flow rate ranging from 0-1400 $\mu\text{mol s}^{-1}$
- System should have built in pressure sensor ranging 50-100 kPa with automatic Chamber pressure control facility
- System must have User-cleanable optics and simple maintenance procedures minimize down time and maintenance costs.
- Power requirements: 12 – 18 VDC or 24 VDC
- Battery Type: Lithium Ion Batteries-more than 6500mAh (2-3 no.) with external charger and system should have internal charging.

IRGA (Infrared Gas Analyzer) Specification:

CO₂ Gas Analyzer

- Measurement Range: maximum upto 3100 $\mu\text{mol mol}^{-1}$
- Precision: within 0.1 $\mu\text{mol mol}^{-1}$ at ambient level (Averaging at 400 $\mu\text{mol mol}^{-1}$).
- Accuracy: Within 1% of reading

H₂O Gas Analyzer

- Measurement Range: Maximum upto 75 mmol mol⁻¹
- Precision: within 0.01 mmol mol⁻¹ (averaging at 10 mmol mol⁻¹)
- Accuracy: Within 1.5% of reading

CO₂ Control Specifications:

- CO₂ control range: 0 – >2000 $\mu\text{mol mol}^{-1}$
- CO₂ cartridge type: 8 gram
- CO₂ Scrubber: Soda lime

H₂O Control Specifications:

- H₂O control range: 0 – 90% RH (non-condensing)
- Humidifier substrate: System should have suitable humidifier substrate.
- Desiccant: Drierite

Temperatures Control:

Chamber Temperature Control Range: ± 10 °C from ambient

- Air & Block Temperature Sensor:
Type: Thermistor
Range: -10 – 60 °C
Accuracy: ± 0.15 °C
- Leaf temperature sensor:
Type: E type fine-wire thermocouple
Sensitivity range: -10 – 60 °C
Accuracy: $< \pm 0.5$ °C total;

Light Measurement/control:

Light Source Uniformity should be $\pm 10\%$ with variation over 90% of aperture.

Leaf Chamber Internal PAR sensors:

- Range: 0 – 3000 $\mu\text{mol m}^{-2} \text{s}^{-1}$
- Resolution: $<1 \mu\text{mol m}^{-2} \text{s}^{-1}$
- Accuracy: $\pm 5\%$ of reading;

Ambient PAR Sensor:

- Detector: Silicon photodiode
- Range: 0-3000 $\mu\text{mol m}^{-2} \text{s}^{-1}$
- Accuracy: $\pm 5\%$ of reading;

Chamber pressure Control Specification:

- Range: 0.2 – 2 kPa
- Resolution: $<1 \text{ Pa}$ typical
- Setpoint resolution: 1.0 Pa
- Control Range: 0 – 200 Pa
- user selectable to avoid small leakage from the chamber

The system should have the options to connect at least 8 external sensors. At least one Soil Moisture and 2 soil temperature sensor should be quoted with the system as standard accessories. These parameter should be measured simultaneously at the time of measurement of Photosynthesis and data should be synchronised.

The system should be compatible and also have the facility to connect Arabidopsis chamber, insect respiration chamber, Soil CO₂ Flux, Bryophyte chambers etc. The bidder should have experience to maintain the Instrument, also should submit at least 5 order copies of last 2-3 years and installation reports.

Warranty: The instrument should have warranty at least for 3 years.

The system should be supplied with Soda lime Silica gel and 75 Nos. CO₂ Cylinders, spare parts kit and other accessories.

A data downloading system (i7&i5 laptop computer) for data analysis in field should also be supplied including the equipment cost at the time of demonstration.

The other terms and condition will remain unchanged except the above.

Purchase Officer
FRI