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Autoclavable 3 lit Photo Bioreactor

Autoclavable 3 lit Photo Bioreactor (DF/PBR-03)

We manufacture benchtop Autoclavable Photo Bioreactors (PBR) as per the customised design. Conventional bioreactor designs such as bubble column reactors & immobilized bed reactors are both unsuitable for root cultures, due to inherent design limitations of mass transfer of nutrients & carbon dioxide. Some of the other problems in these reactors are related to scale-up issues, including distribution of inoculums & product recovery.

All the above problems are overcome in our design of the equipment, which is based on the agitation-gassing principle. Root cultures grow well in mechanically agitated systems, or stirred tank reactors, although performance can be affected due to damage done to the roots due to contact with impellers inside the reactor. However, we have overcome this limitation by designing & developing proper agitation systems to ensure gentle but adequate stirring.

Some of the other advantages in our design of Photo Bioreactors as compared to conventional designs are: -

- Provision of External Jacketed illumination assembly for improving biomass productivity through better utilization of light.
- Sterilization of the entire assembly for non-contaminated operations.
- Simple & aseptic arrangement for Sampling of the material.
- Data logging system for continuous data analysis with high accuracy providing sensors.

TECHNICAL SPECIFICATIONS & SCOPE OF SUPPLY

1. Photo Bioreactor (PBR) vessel:

- Borosilicate glass vessel
- Total capacity 3 liter's.
- Working volume of 2 liter's.
- Stainless steel support plates (top & bottom) with ports & fittings for the following :-

- Gas inlet deep pipe, Gas Vent, Media in,
- Thermowell for PT 100 temp. sensor mounting, Spare nozzle.

2. Agitation (stirring) arrangement:-

- Magnetic stirrer with knob for speed setting, range 300 -- 1500 RPM with PTFE coated magnetic stirrer bar for gentle stirring.
- Digital RPM meter for motor speed.

3. CO2 Gas control System:-

- Pressure regulator with pressure gauges for fitting on standard CO2 gas cylinder
- CO2 flow rotameter with needle valve for manual flow control setting
- Autoclavable gas filter capsules. rating 0.2 micron, for gas inlet & exhaust

4. Modular Light source: -

- LED lamp producing light in the range of 470-630 mu wavelength & up to 5000 lux intensity.
- Mounting arrangement for Alternative lamps can also be used by the end user, as per requirement.

5. Temperature control system:-

- RTD Pt-100 temperature sensor with temperature control arrangement for accurate control
- Master control Microprocessor-based digital temperature controller for coarse control
- Slave control -Thermostat control with fine adjustment knob with Warming plate on which the fermenter vessel is placed, as the heat source having Control range from ***room temperature to 60°C,***

6. Control panel Console:-

- Powder coated control panel console with electrical switchgear, panel accessories & mounting arrangement for various panel-mounted instruments.
- Suitable for tabletop mounting adjacent to Photo Bioreactor.

7. Mounting arrangement:-

- Sturdy powder coated benchtop mounting stand for the complete system,

Key features of Photo Bioreactor system: -

- User friendly , Easy to operate, clean, & store.
- Very Light-weight & compact, with low noise & vibrations
- Low power consumption; works on single phase power supply
- Low maintenance cost.

This model is suitable for the following applications: -

- College-level experiments, demonstration, practical
- Suitable for a variety of root cultures such as algae & mycorrhizae.
- Research work on the following :-

  Microbial cultures (bacteria, yeasts, actinomycetes, fungi)
- Low, medium or high conditions of the following :-

  Broth viscosity, broth density & cell density