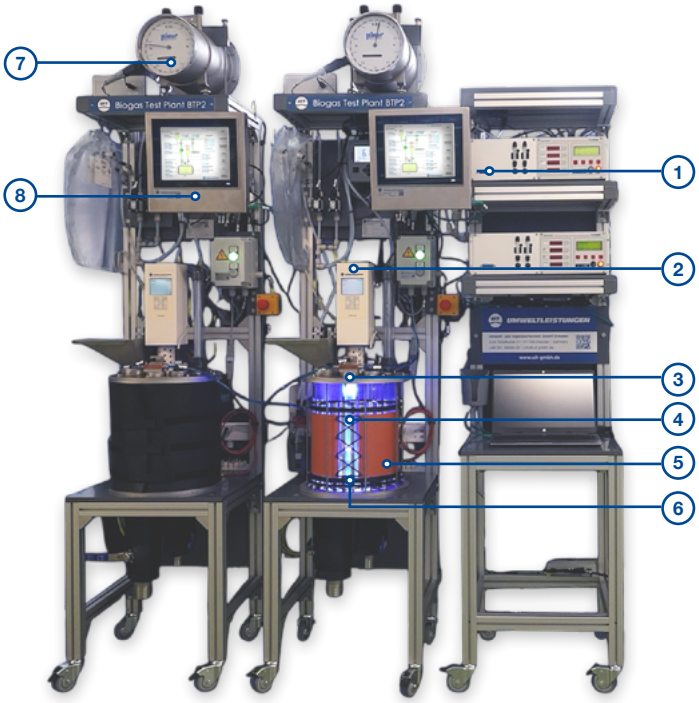
UMWELTLEISTUNGEN

Technology pro environment

PHOTOBIOREACTOR

A photobioreactor uses light to cultivate photosynthetically active microorganisms such as algae, cyanobacteria or phototrophic bacteria. Of particular note is the advanced lighting supply and in-situ measurement technology for monitoring light irradiation in the bioreactor.
For this purpose, LED light bars and an in-situ multi-channel sensor system are used.



Components overview

1. Gas quality analyzer
2. Mixer unit
3. Photobioreactor
4. Lighting system
5. Heating / cooling system
6. Sparkling system
7. Gas amout meter
8. SENSOcontrol data acquisition and control system

The photobioreactor provides controlled conditions for:

- ✓ Light supply
- ✓ Temperature
- ✓ Nutrient supply
- ✓ Gas management

Features and options

- ✓ Up to 10 bioreactors on one gas quality measurement system
- ✓ Reactor with different working volumes
- ✓ Continous operation with feeding
- ✓ Electrical heating / cooling
- ✓ SENSOcontrol with touch panel
- ✓ Sparkling system with MFC (mass flow controller)
- ✓ Dosage pumps for pH-control
- ✓ Advanced lighting system
- ✓ Measurement equipment: Gas quantity, pH, redox, temperature, gas quality and more

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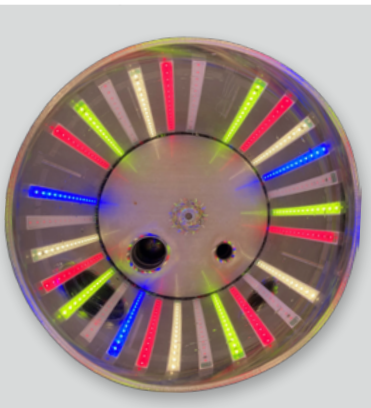

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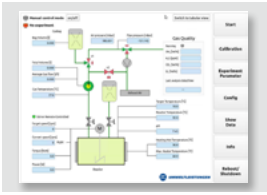
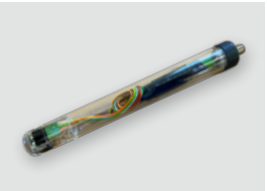


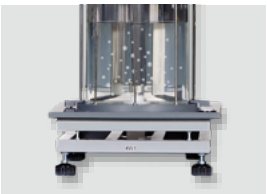
SENSOcontrol

The universal automation system SENSOcontrol is used for data acquisition applications and control of units (pumps, mixer) of the test plant.
A touch panel for intuitive operation is integrated for user-friendly parameter set-up and real time visualization of measured data.



In-situ light intensity sensor

A light intensity sensor with 14 channels is available. This allows semi-quantitative measurement of in-situ light intensity. The sensor measures wavelenghts between 350 and 900 nm.



Sparkling systems

The additional sparkling system with a mass flow controller allows the defined sparkling of gases. Gas mixing systems are also available.

LED lighting system

- ✓ **Red wavelength:** 670 nm, each with 15 LEDs; total power per module up to 1.5 W
- ✓ **IR wavelength:** 740 nm, each with 15 LEDs with integrated visible control LEDs; total power per module up to 1.5 W
- ✓ **Green wavelength:** 570 nm, each with 15 LEDs; total output per module up to 1,200 lm/2 W
- ✓ **Blue wavelength:** 480 nm, each with 15 LEDs; total output per module up to 270 lm/3.6 W
- ✓ **White color:** 2,700 K with 15 LEDs each; total output per module up to 825 lm
- ✓ Dimensions of each lighting module 300 x 15 mm – others on request

Information on Photobioreactor

The equipment features will be defined with the quotation.

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