BlueSens

understanding bioprocesses

Automated Bio-Methane Potential (BMP) evaluation system

Understand your bioprocess with BlueSens

It is our philosophy to make bioprocessing as open and user-friendly as possible so the user gets a controlled process with the highest possible process reliability.

01 Measure in the process: no contamination, continuous readings without interruptions

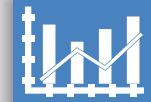
02 Real-time measurement

03 Modular setup: adopt the system to your demands

04 Confidence about the process conditions and highest reproducibility

05 No gas treatment (e.g. CO_2 absorption)

06 Simultaneously monitor all important process parameters (e.g. pH, pO_2, etc. and not only CH_4) and control actuators

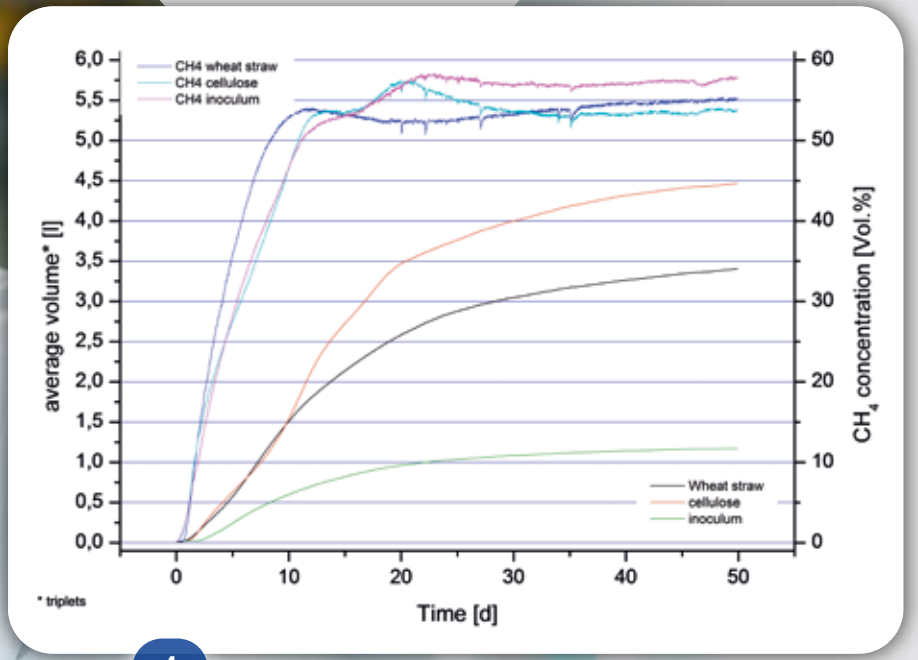


07 For all scales

08 Save time & money: no effort during experiments through automated measurement


The Yieldmaster is ideal to compare different substrates with each other. With this analysis system you know exactly at which time how much methane was produced. The BlueVis software provides very convenient measurement.

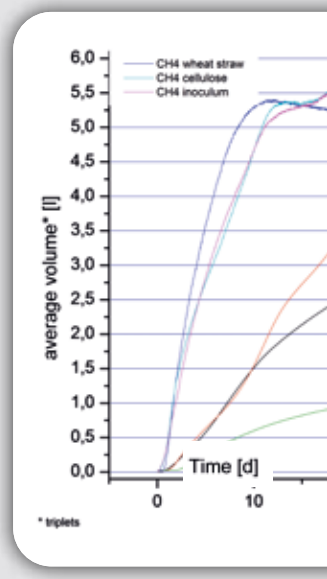
Know and monitor the produced CH_4 volume in real time. Compare the gas yield of different substrates



What is the Yieldmaster?

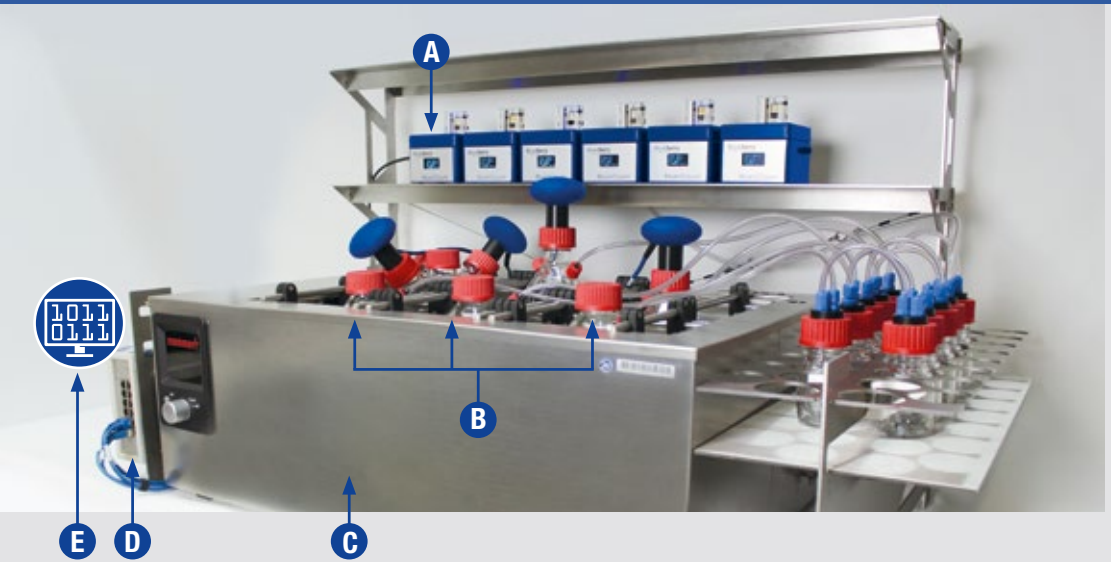
The basic configuration consists of a glass bottle connected to the high precision gas volumetric flow-meter BlueVCount for up to 80 ml/min providing a resolution of 1 ml. Due to integrated pressure and temperature compensation it displays standard volume. Also humidity effects are compensated for each device individually.
A professional setup as used for research purposes adds BlueSens' well proven BCP single gas analyzers for e.g. CH_4, CO_2, O_2 or H_2 to the system. These analyzers might either be positioned directly at the headspace (for headspace correction according to VDI 4630) or in the off-gas line of any fermenter to consistently visualize the kinetics of the process.
In addition to our fermenters from 250 ml to 5.000 ml accessories like waterbath, stirrer, feeding pumps, etc. are available.
Data evaluation and process control can be performed by the BlueVis software.

	Yieldmaster	Eudiometer
Real time gas analysis in the process: no sampling	✔	✘
Detection of other important gases besides CH_4 possible	✔	✚[1]
Optional pH probes connectable	✔	✚[1]
Flexible scale	✔	✔
No gas treatment/filtering needed	✔	✘
Software for automated logging and managing of the process	✔	✘
Automated data acquisition of all values	✔	✘
No hazardous substances needed	✔	✘



[1] additional equipment needed

Yieldmaster setup



A Precision volumetric flow-meters BlueVCount (see also page 9)

B Up to 12 CH_4 sensors, other sensors (CO_2, O_2, H_2) also addable

C Water bath with integrated thermostat

D Electronic connection box BACCom 12 for central power supply and data interface to PC (RS232, Ethernet)

E Software BlueVis for data logging and process management (see also page 10/11)

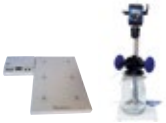
Gain information about your process kinetics, substance behavior, substrate characteristics and outputs

Your advantages:

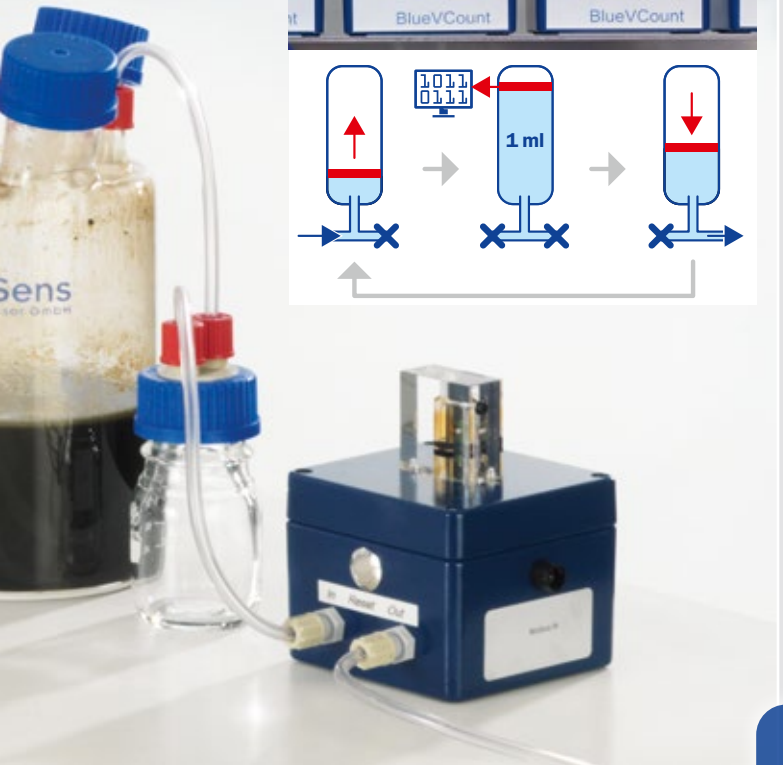
- No minimum gas flow required
- High sample throughput
- Real-time monitoring
- Visualizing metabolism phenomena
- Compareable results by parallelism
- Automatic data acquisition, high grade of automation

Configure your individual Yieldmaster system

1. Select the volumetric flow-meter	BlueVCount	
2. Select vessel	Vessel flat bottom for magnetic stir bar, various round jars	
3. Select the relevant gases, you want to measure	CH_4, CO_2, O_2, H_2	
4. Select a heating system	Heated water bath or heating jackets	

5. Select stirring method	Magnetic stirring plate or overhead stirrer	
6. Select options	Diverse sensors and actuators	
7. Select data transfer	RS232 (USB), Ethernet by BACCom (RJ45)	

BlueVCount volumetric flow-measurement



High quality gas volumetric measurement: professional and precise

The BlueVCount measures gas volumes in reactions of all kind. It is usable for fermentations, degradation studies, substrate comparison studies, in wastewater treatment, bioethanol or hydrogen production and is especially helpful in bio methane potential (BMP) determinations in industry and academia. Gas volume measurement delivers important information about the process and helps to optimize yields and process procedures. There is no minimum flow required.

BlueVCount at a glance

- More process information
- Leads to less number of experiments and optimized yields
- No water or oil refill necessary
- Shows standard volume because of integrated pressure and temperature compensation
- Integrated display for important process data at a glance
- Interconnectable devices (daisy chain) for less cable tangle
- BlueVIS ready via Modbus RTU
- Compatible with other Modbus RTU solutions

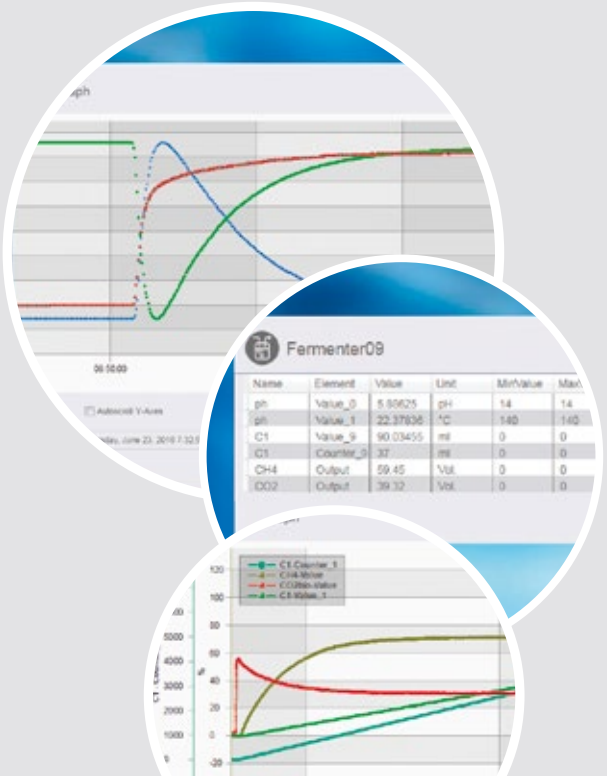
Run your own automated calculations with BlueVis in real-time by integrated math sensors

With BlueVis you can:

- Analyze and manage your process in real-time
- Connect all kind of analog or digital sensors
- Control pumps, stirrers and thermostats
- Log, document and visualize all experiments

Manage your process with BlueVis

Use the BlueVis software to manage your process. Discover the new BlueVis 4.0 to run, monitor and to control your anaerobic digestion process. With BlueVis you can manage your complete Yieldmaster system. Calculations are compliant to VDI 4630.



Datasheet

Volumetric flow-meter

BlueVCount	
Maximum flow	4.800 ml/h
Min. flow	0 ml/h
Accuracy	± 2%
Resolution (standard volume)	1 ml

Gas analyzers

Sensor	
Principle	CH_4, CO_2: Infrared, Dual wavelength
Measuring range	CH_4: 0 - 100 Vol. % CO_2: 0 - 50 Vol.%
Drift/ Long-term stability	< ± 2% reading / year
Accuracy	CH_4: < 0.2% FS* ± 3% reading, CO_2: < ±0.5 % FS* ± 5% reading
Material	PA
Dimension/ Weight	80 x 160mm (3.15" x 6.3") D x H / approx. 260 g (0.57 lb)
Materials in contact with gas	Steel 1.4571, Viton, Sapphire, PTFE
Mechanical connection	GL 45

General	
Operating conditions	Temperature difference max. 25 °C (45 °F) e.g. 15 - 40 °C (59 - 104 °F), 0 - 100% RF
Pressure range	0.8 - 1.3 bar (11.6 - 18.85 psi)
Storage conditions	0 - 60 °C (32 - 140 °F),< 75% RF not condensing

* FS: full scale

Electrical connection / Interface

BACCom incl. integrated pressure measurement 0.8 to 1.3 bar (11.6 to 18.85 psi)	
Input	RJ45 for up to 12 gas analyzer
Output	RS232 (USB), Ethernet by BACCom (RJ45)
Power supply	12V DC, 4A
Dimension/ Weight	205 x 160 x 45 mm (8.07" x 6.3" x 1.77") L x W x H / 600 g (1.32 lb)

Software

BlueVis	
Features	Graphs for concentrations (CH_4, CO_2 etc.) and standard volume, control and documentation of stirrers, cryostats, probes, pumps etc. and calculations compliant to VDI 4630
System requirements	Windows7™ or higher, CPU: I5 Quad-Core, better or equivalent, HDD: 500GB, 8GB RAM, 64bit

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