

MAKE

MODULAR BIOPROCESS PLATFORM

MODULAR • AUTOMATED • ADAPTABLE

MAKE it happen

Configure the hardware around the process - not the other way around.



MODULAR

Build only what the workflow needs.



AUTOMATED

Reliable and reproducible runs.



ADAPTABLE

Change vessel, stirrer or operating mode.



CULTIVATE

Microbial, mammalian and custom processes

MONITOR

DO, pH, temperature, weight and more

CONTROL

Stirring, gassing, pumping and dosing

TRANSFER

Reusable workflows and comparable data

One platform.

Different processes.

MAKE assembles the functions a process actually needs - from basic cultivation to controlled feeding, gassing, sensing and data acquisition.

Microbial cultivation

Configurable agitation, aeration, feeding and online sensing.

Mammalian cell culture

Gentler agitation, controlled additions and adaptable sensor integration.

Screening & process development

Comparable small-scale setups in a consistent control and data environment.

Fed-batch & dosing

Dedicated liquid transfer for feed, acid/base and other additions.

Gas-controlled processes

Gassing based on cascade or set point depending on the complexity of your process

Custom configurations

Integrate non-standard vessels, sensors and experimental configurations.

Recipes

Save and load recipes for consistent, repeatable operation.

Process phases

Define phases for structured process development

One Controller, many applications

Modular. Flexible. From simple to advanced bioreactors.

Modular vessel system



Same vessel, different head and bottom assemblies. Three heights (exchangeable tube length) from multi-use plastic. Expandable to any reactor shape, including airlift, bubble column and photobioreactors.

Fully customizable headplate



Different headplates for various process configurations and ports.

Fully customizable bottom



Integrated sparger and integrated sample and harvest line.

Stirrers



Available in three sizes for pitched blade and Rushton turbine. All other configurations can be made on request.

Motor options



Your choice of high rpm motor controller (300 - 3000 rpm) or low rpm motor controller (0 - 300 rpm).

Gassing options



Up to 4 individual gas valves for gas selection and gas mixing.

Mass flow controller (optional)



State of the art mass flow controller for precise gas flow control.

Precision pumps



Up to 4 precision peristaltic pumps can be connected.

Scales



Up to 3 scales connectable easily and directly to the controller.

4-20 mA sensor module



Up to 4 4-20 mA industrial standard sensors connectable directly to the controller.

Temperature control



Temperature sensor integrated and precise temperature control using Peltier elements.

Sensors and sensor boards



Connectable sensor boards for cheap non-industrial, non-autoclavable pH and DO sensors.



System status light

Full color spectrum status light controller for visible indication of system and operating status.



Available MAKE modules

Select only the functions needed today. Extend the system when the workflow changes.

Available Modules

MODULE	FUNCTION
 Base	Core platform with interfaces for up to three scales.
 Controller Module	Central controller and system interface.
 System Status Light	Visible indication of system and operating status.
 Pump	General liquid-transfer pumping function.
 4-20 mA sensor module	Standard connection/interface module.
 Gassing	State of the art mass flow controller for controlled bioprocess gassing.
 Gassing Simplified	On-Off aeration to keep culture above a minimum setpoint
 Motor Micro	300-3000 rpm agitation drive for microbial applications
 Motor Cell	0-300 rpm for gentler cell-culture applications
 Scale	Gravimetric integration for vessel, feed or consumption monitoring.
 Vessel Holder	Mechanical support for the selected process vessel including heating and cooling.

Example Assembly



- Controller module with temperature sensor
- Stirrer Module Microbial
- Gassing Module
- Sensor Module (4-20 mA)
- Precision Pump 1
- Precision Pump 2
- Base Module (with Vessel Holder)

Why modular?

Start small and upgrade your machine later. Modules can be upgraded or exchanged.

START SMALL. EXTEND LATER.

Different vessels, agitation demands, gas strategies, dosing schemes and sensing requirements can be combined on a common platform.

ADAPT TO THE PROCESS.

Rapid prototyping supports changes to stirrers, vessels, airlift or photobioreactor operation and other custom modes.

DIGITAL & EXPANDABLE.

Advanced monitoring can include soft sensors, dynamic oxygen uptake rate measurements, warnings, alarms and automated reports.

TRANSFER THE WORKFLOW.

A common control environment supports reproducible operation, real-time monitoring and consistent data handling across configurations.

Recipes can be created and shared.

Configure MAKE around your workflow

Example configurations show how the same platform can be adapted to different applications.



MICROBIAL PROCESS DEVELOPMENT

- Base · Controller Module · Vessel Holder
 - Motor Micro · Gassing · 4-20 mA module
- 3 Pumps**



CELL-CULTURE PROCESS DEVELOPMENT

- Base · Controller Module · Vessel Holder
 - Motor Cell · Gassing · 4-20 mA module
- 1 Pump**



AFFORDABLE TEACHING OR SCREENING

- Base · Controller Module · Vessel Holder
- Motor · Gassing Low-Cost · 4-20 mA module

The MAKE workflow

01

CULTIVATE

Microbial, mammalian and custom

02

SENSE

pH, DO, temperature, weight

03

CONTROL

Stirring, gassing, pumping

04

MONITOR

Real-time process data

05

TRANSFER

Reusable workflows, recipes and data

MAKE

Modular bioprocessing without locking the process into a fixed system.

Flexible hardware · Automated control · Sensor integration · Transferable workflows and data

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