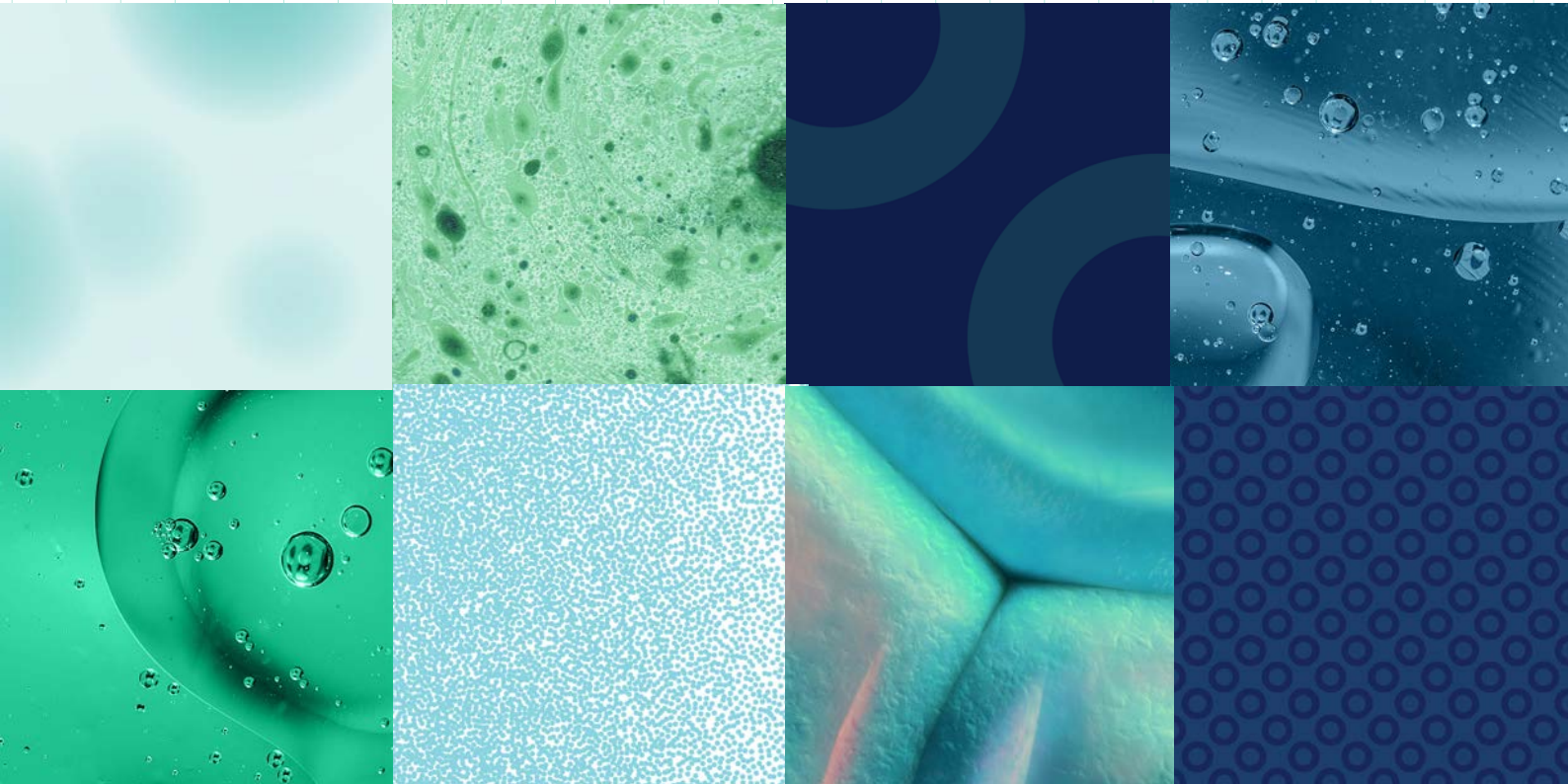




We pioneer revolutionary,  
market-leading single-use  
airlift bioreactor systems  
and technology.



# The most innovative technology on the market

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## Cellexus International

At Cellexus International, we research, develop and manufacture the CellMaker range of revolutionary single-use airlift bioreactor systems and related technology.

Our innovative system is expertly designed for the life sciences and pharmaceutical industries. We offer a unique way of aerating and mixing your bioprocess using airlift technology designed to simplify, accelerate and improve your cell culture, fermentation and bacteriophage amplification.

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## Expert Team

Our team has many years of experience working within the life sciences industry, and we fully understand your needs and challenges.

We are a fully accountable and proactive partner, providing industry-leading expert advice and guidance to our clients.

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## Personalised Solutions

We offer a personalised solution for every client. To ensure the CellMaker is perfect for you, we offer bioreactor rentals to try the system with your own bioprocess.

Each machine is built in-house by our team of engineers. They understand every aspect of the product, so you can rest assured you will receive the support you need to get the system up and running as quickly as possible.

Our support doesn't end there, our experts are available after purchase too.





## The CellMaker

Our single-use airlift technology delivers a unique way of aerating and mixing cells. Gas bubbles are used to move cells and nutrients, eliminating the need for mechanical mixing, with the airlift technology providing exceptional oxygenation.

## How it works

Our system is comprised of a sterile bag that is fitted into an Enclosure to constrain the vessel. Contents of the bag are agitated by an influx of gas through a sparge tube. Our system supports all types of gas and these are accurately controlled.

## Key Features



### Flexible

Use one system to produce a range of cell types in working volumes from 1L to 50L. Plus, the compact size of our system provides a comparably low laboratory footprint.



### Maximum Control

An integrated Peltier-based heater-cooler enables accurate temperature control from 16°C to 42°C without the need for external equipment. Our easy-to-use software allows users to monitor and control parameters (pH and DO) for excellent reproducibility.



### Rapid Results

Faster results give you a faster route to market. Downtime is minimised with a quick set-up with no reactor autoclaving or cleaning required.

## Configure your system

### Controller

Choose from a Regular, Dual Regular, Plus or Low Flow Controller.

### Bioreactor Bags

Depending on your application, choose our Regular, Plus or Cell Culture\* bioreactor bags.

### Enclosure

Choose from an 8L for working volumes of 1L to 8L, or a 50L for working volumes of 10L to 50L.

We pioneer revolutionary, market-leading, single-use airlift bioreactor systems and technology.



# The CellMaker Controller

## The CellMaker Regular Controller

The Regular Controller allows for manual and automatic control of microbial bioprocesses.

With our easy-to-use touchscreen interface, you can control temperature, airflow and an auxiliary gas with excellent accuracy.

- Accurate temperatures from 16°C to 42°C  $\pm$  0.1°C
- Accurate air flow control
- No reactor autoclaving or cleaning required
- Less downtime
- Faster route to market
- Low footprint
- Auxiliary O<sub>2</sub> supply

## The CellMaker Plus Controller

The CellMaker Plus Controller provides all the features of the Regular Controller, with the added benefit of being fitted with sensors to monitor and control:

- pH
- Dissolved oxygen

The Plus Controller also allows for connecting CO<sub>2</sub> and N<sub>2</sub>.

The Plus Controller is compatible with both Regular and Plus Bioreactor Bags.

## The CellMaker Dual Regular Controller

Our CellMaker Regular Controller is available as a dual unit, ideal for scaling up your process. Choose to run identical or different processes at the same time, in either two x 8L units, two x 50L units, or one of each.

- Low footprint
- Interchangeable enclosures to easily scale up
- Choose from:
  - 2 x 8L Enclosure units
  - 2 x 50L Enclosure units
  - 1 x 8L and 1 x 50L units



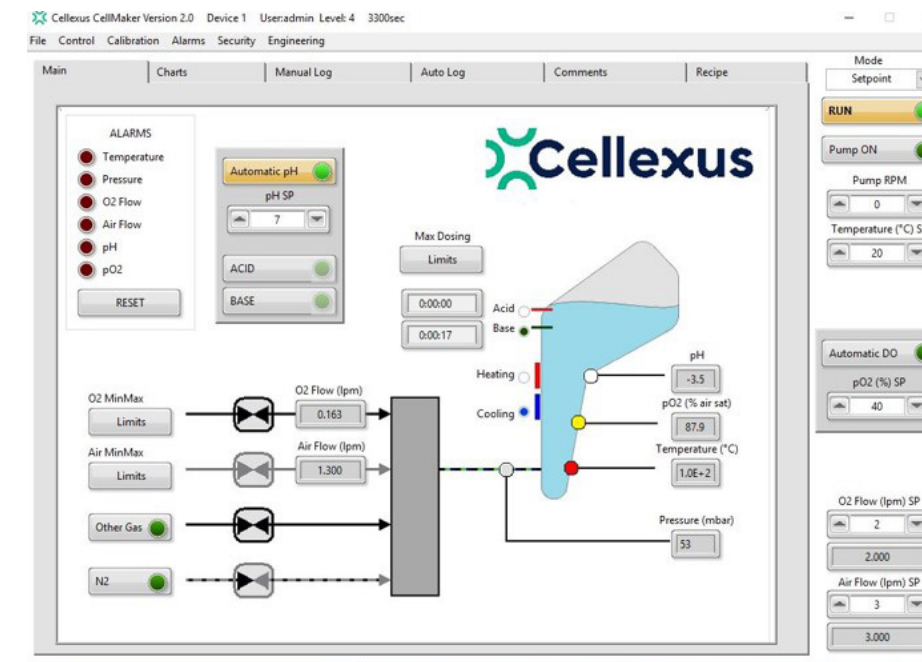
## The CellMaker Low Flow Controller

The CellMaker Low Flow also allows for monitoring and control of pH and DO, but the airflow is reduced for more gentle and low shear stress.



## The Software

Our systems are complete with custom-built 21 CFR PART 11 compliant software, accessible through a touchscreen monitor.



## Complete your Bioreactor

Complete your bioreactor with an 8L or 50L Enclosure and our CellMaker Bioreactor Bags.

The CellMaker range is available to purchase worldwide.

[cellexus.com](http://cellexus.com)



# The CellMaker Enclosure

## Enclosures

The CellMaker Controller is accompanied by a patented Enclosure which houses our bioreactor bags. This system uses unique airlift technology to move cells and nutrients while eliminating the need for mechanical stirring.

For complete control, our self-contained system offers oxygen, pH and temperature regulation, with an integrated Peltier heater-cooler enabling accurate temperature control from 16°C to 42°C without the need for external equipment.

## Features

- An ergonomic way to thermoregulate your bioreactor
- An integrated Peltier heater-cooler enables accurate temperature control from 16°C to 42°C
- Supports versatile types of fermentation
- Work in volumes from 1L to 50L
- Buy a complete 8L system today, and scale up tomorrow by simply adding a 50L enclosure



8L Enclosure

50L Enclosure



## CellMaker Controller Features

	Regular Controller	Dual Regular Controller	Plus Controller	Low Flow Controller
Compatible with:				
8L Enclosure	Y	Y	Y	Y
50L Enclosure	Y	Y	Y	Y
Regular Bioreactor Bags	Y	Y	Y	Y
Plus Bioreactor Bags	N	N	Y	Y
Cell Culture Bioreactor Bags*	N	N	Y	Y

Contact us to discuss  
your requirements  
[cellexus.com](http://cellexus.com)

# The CellMaker Bioreactor Bags

## Single-use technology

Say goodbye to lengthy downtime with our single-use bioreactor bags.

These specially designed bioreactor bags have been created to perfectly suit our system and your application. These single-use bags are easily replaced within minutes for a fast turnaround, so you can start on your next process.

## How it works

Our sterile bags are fitted into the enclosure and the contents are agitated by bubbles created by a customisable mix of gasses. Our robust system is designed without any moving parts, eliminating the possibility of mechanical failure. In addition, gentle agitation from our bubbles reduces the risk of cell shearing usually associated with impeller mixers.

## Bag options

Our bioreactor bags are specially designed for your application to ensure you get the best results every time.

Regular and Plus bags are available in 4L, 8L and 50L sizes, while our Cell Culture bags are available in 8L and 50L sizes.

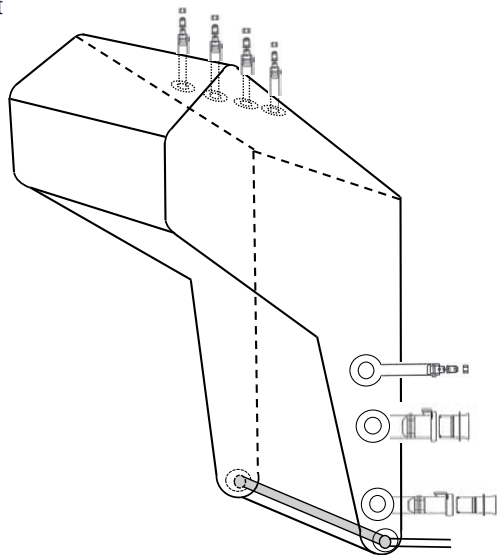
## Manufacturing

We work in partnership with our bag manufacturer to create reliable bioreactor bags that are perfectly suited to your application. Our flexible approach to customer service means we can work with you to create customised bags where required.

Our bags are created to ISO 70000 medical grade manufacturing standards. This means they are sterile and ready for use in your clean room.

## No downtime

Our technology eliminates reactor cleaning and sterilisation: once your run is complete, simply harvest, remove the bioreactor bag and set up the next process.



## Regular Bags

The CellMaker Regular Bioreactor Bags are ideal for simple applications not requiring DO monitoring, such as bacteriophage amplification, and are compatible with both the Regular and Plus systems.

## Plus Bags

These bags contain a sensor for measuring dissolved oxygen and a pH probe port making these bags ideal for providing precise control over more challenging processes, such as protein overexpression or high density biomass production.

The CellMaker Plus Bioreactor Bags are compatible with the Plus and Low Flow systems.

## Cell Culture Bags

The Cell Culture Bioreactor Bags are a customised version of the Plus bags, designed for cell lines with particular requirements. They offer larger bubble sizes, but with minimal airflows over 0.5lpm.

\*Available by special request only, please talk to our team for more information.

## CellMaker Bioreactor Bags Technical Specifications

	Regular Bioreactor Bags	Plus Bioreactor Bags	Cell Culture Bioreactor Bags
Compatible with:			
Regular Controller	Y	N	N
Dual Regular Controller	Y	N	N
Plus Controller	Y	Y	Y
Low Flow Controller	Y	Y	Talk to us
8L Enclosure	Y	Y	Y
50L Enclosure	Y	Y	Y
Applications	Phage amplification	Microbial & Mammalian	Mammalian cell culture
Inoculation / Sampling port	Y	Y	Y
Cell Density Probe port	Y	Y	Y
Media inlet / harvest outlet	Y	Y	Y
pH Probe Port	N	Y	Y
DO optical sensor	N	Y	Y

Contact us to discuss your requirements

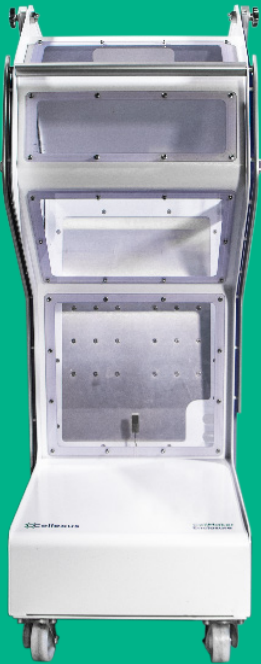
[cellexus.com](https://cellexus.com)

# The CellMaker

## Technical Specifications

Regular Controller	Dual Regular Controller	Plus Controller	Low Flow Controller		8L Enclosure	50L Enclosure
Dimensions						
420mm (w) x 530mm (h) x 630mm (d)					300mm (w) x 541mm (h) x 353mm (d)	502mm (w) x 1462mm (h) x 750mm (d)
Weight						
31.35kg	37.3kg	34.2kg	34.2kg		15.8kg	54.7kg
Working Volumes						
					1L - 8L	10L - 50L
Power						
500W	1000W	500W	500W		160W +45W Condenser	320W +45W Condenser
Working Voltage						
24V DC	24V DC	24V DC	24V DC		24V DC	
Connection Requirements						
2 standard wall sockets - 110V / 240V						

Visit our website for more information on our product range: [www.cellexus.com/products](http://www.cellexus.com/products)



## Rent a CellMaker

We now offer the option to rent a CellMaker so you can try before you buy.

[www.cellexus.com](http://www.cellexus.com)  
+44 (0) 1382 666357

Choosing which bioreactor to purchase is an important decision and we want to make sure you get it right. That's why we now offer flexible rentals to ensure it's the right bioreactor for you.

Once you are satisfied, you have the option to purchase a system at a discounted price.

For complete peace of mind, talk to our team today.

# Applications

The CellMaker has been proven in a wide range of cell lines including microbial fermentation, bacteriophage amplification and mammalian cell culture, making it ideal for use in the life sciences and biopharmaceutical industries.

## Bacteriophage Amplification

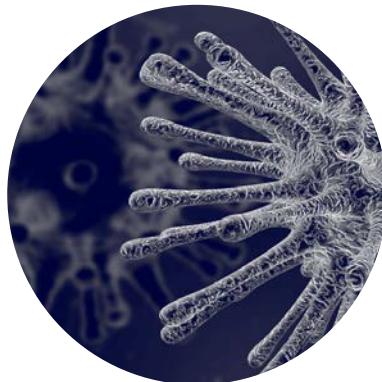
Our system automates your processes, offering batch-to-batch reproducibility and volume efficiency with excellent titres. Plus, our single-use technology reduces the risk of culture contamination, cross-contamination between batches and offers complete control of the growth environment.

The CellMaker has successfully produced high titres of phages from *E. coli*, *Salmonella*, *Listeria*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Yersinia ruckeri*.



## Mammalian Cell Culture

Our system provides gentle mixing with low shear stress to produce quality antibodies, and maintains optimal conditions for the production of mammalian cells throughout the run. Our system automates your process for reproducible results at the touch of a button.



## Microbial Fermentation

The CellMaker provides a fast solution for microbial fermentation. With a compact size, our self-contained bioreactor has a lower footprint than others on the market. Our system has been proven with bacteria, yeast and microalgae.

*We have found the CellMaker reliable, easy to use and invaluable in our pharmaceutical processes. Our qualified team likes working with this bioreactor, using the advantages of disposable technologies. The CellMaker produces the quantity and quality of bacteriophage that we are looking for. The 4 CellMaker systems have become a vital part of a production process of our innovative BAFASAL<sup>®</sup> product.*

**Dr. Arkadiusz Wojtasik**  
Project Director  
Proteon Pharmaceuticals S.A.





# Third Party Accessories

## Media Feed Pumps

- Watson Marlow 323Du/D peristaltic pump
- Adjustable pump head for 4 – 10mm outed diameter tubing
- Controlled manually or via the CellMaker Controller software
- Compatible for the Recipe mode
- Ideal for filling and emptying the CellMaker bags, fed-batch and continuous fermentation



## Cell Density Sensing - Coming Soon!

- Provided by Aber Instruments with dedicated software
- Newly released Optura sensor with high precision and range is ideal for bacterial and yeast fermentation
- Aber's flagship Futura technology is specifically designed to detect only the living eukaryotic cells in the bioreactor bag
- Both sensors have been diligently tested and approved by the Cellexus Team for use with the CellMaker bioreactor bags



# ABER



## pH Sensing

- Expand CellMaker Regular with pH monitoring EasyFerm stand-alone probe from Hamilton
- EasyFerm Bio Arc pH probes connect to the PC via Arc USB Power Cable
- pH can be monitored and recorded live with the ArcAir software



# HAMILTON



## OneFerm Arc single use pH sensors

- No autoclave to sterilise the reusable pH probe for CellMaker Plus? No problem!
- OneFerm SU Arc pH probes from Hamilton can be used with the CellMaker software
- Probes are pre-calibrated, calibration uploaded via Arc USB cable or Arc Wi adaptor
- Cellexus will provide a reusable bag connector



Contact us to discuss  
your requirements

[cellexus.com](http://cellexus.com)

# Case Studies and Testimonials

## Real world applications

Our technology is flexible and can be used across industries. The CellMaker is currently in use in the animal health, food safety, crop protection and drug discovery industries.

Our technology has successfully amplified phages from *Escherichia coli*, *Salmonella*, *Agrobacterium*, *Listeria*, *Pseudomonas aeruginosa*, *Pseudomonas syringae*, *Staphylococcus aureus* and *Yersinia ruckeri* all producing exciting results.

## Results using the CellMaker

Bacteria	Inoculum PFU/ml	Final PFU/ml	Amplification Factor
<i>Salmonella</i>	$2 \times 10^5$	$1 \times 10^{10}$	X 50000
<i>Agrobacterium</i>	$5 \times 10^5$	$1.25 \times 10^{10}$	X 25000
<i>Escherichia coli</i>	$1 \times 10^6$	$3 \times 10^{10}$	X 30000
<i>Pseudomas syringae</i>	$4 \times 10^6$	$3 \times 10^{10}$	X 30000



Read more case studies on our website.

[cellexus.com/applications](https://cellexus.com/applications)



We pioneer revolutionary, market leading single-use airlift bioreactor systems and technology.

## Contact

Contact us to try your own cell culture, or to discuss how the CellMaker range can improve the efficiency of your bioprocess.

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