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magnetic emotion

bioREACTOR 48

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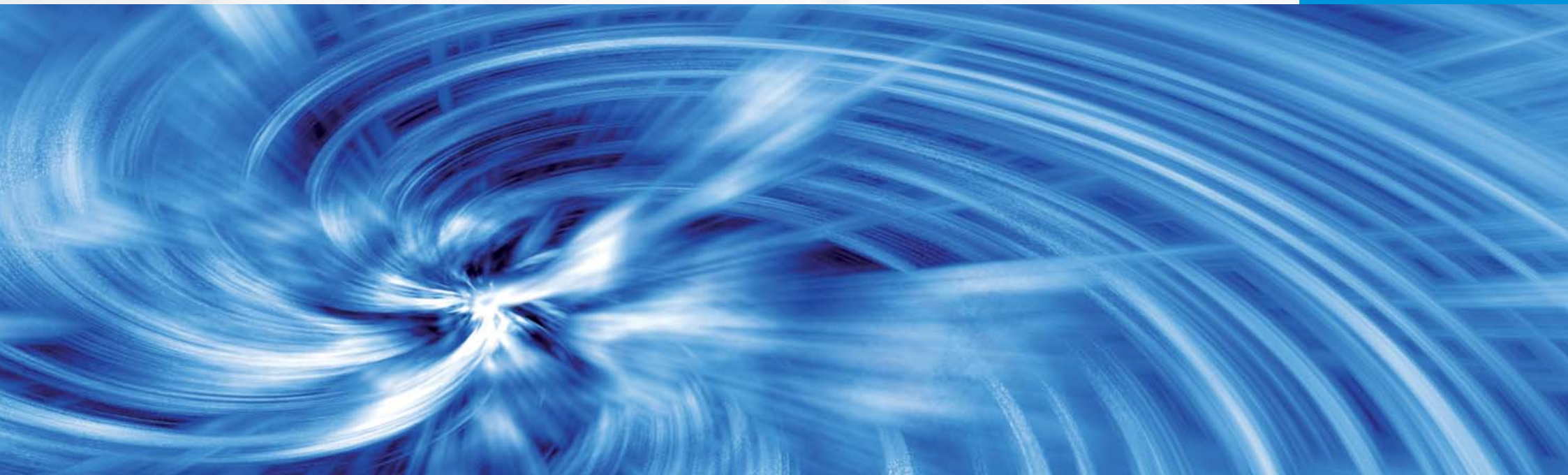

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2mag is providing you more than 30 years of competence in the conception, development, production and sales of magnetic and inductive drive concepts, as e.g. magnetic stirrers. This experience paired with a great passion and emotion for our customers – and our products – enables the fast and economic creation of solutions precisely for your needs.

„Customizing", the manufacturing of special made products, is our business, our competence and our passion! Individual requests will result in individual – and even more important – also economically realizable solutions.

Ask us – test us – we are there for you!

emotion for motion

- Customer-oriented
- Short communication ways – competent team
- Direct access to experienced contact persons
- Fast reactions
- Innovative products
- Well-proven concepts
- Experience in the development and construction of inductive drive concepts as well as tempered systems for many years

The main importance of our passion lies upon our customers and our products!

motion

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Single stirring point	Multiple stirring points
up to 3 litres stirring volume, without motor	
MIX 1 eco	
accuMIX	
cuvetteMIXdrive 1	
MIXdrive 1 XS	
MIXdrive 1 eco	
MIXdrive 1 eco HT	
	MIX 15 eco
up to 10 litres stirring volume, without motor	
MIX 1	
	MIX 4 MS
	MIX 6
	MIX 15
MIXdrive 1	
MIXdrive 1 HT	
atexMIXdrive 1	
	MIXdrive 6
	MIXdrive 6 HT
	MIXdrive 15
	MIXdrive 15 HT
	MIXdrive 60
	MIXdrive 60 HT
up to 1,000 litres stirring volume, strong	
MIX 1 XL	
maxMIX	
MAXdrive	
FABdrive	
steriMIXdrive	
atexMIXdrive	
for cell cultures, warming-free	
bioMIX 1	
bioMIXdrive 1	
	bioMIXdrive 2
	bioMIXdrive 3
	bioMIXdrive 4
	bioMIXdrive 6
heated magnetic stirring systems	
hotMIX 1	
	STIRRING DRYBATH 15-100
	STIRRING DRYBATH 15-250
	STIRRING HOTPLATE 6
	STIRRING HOTPLATE 15
	bioREACTOR 48

with external control unit (stirring drive submersible - not heated systems)

48-FOLD PARALLELIZED MILLILITER STIRRING SYSTEM FOR EFFECIENT DEVELOPMENT OF BIOPROCESSES

By combining micro system processing, biochemical engineering know-how and high sensitive noninvasive optical sensor technique, an innovative 48-fold parallelized milliliter fermentation system could be created.
Designed for the scale-down of biotechnological production processes into the milliliter-scale, developed for efficient process development and high throughput screenings in the biotechnological, chemical and pharmaceutical research, simple handling with very high time and cost savings due to the parallelization and miniaturization.

2mag bioREACTOR 48

Space-saving, user-friendly and simple manageable bioreaction block with 48 miniaturized, inductive wear-free and maintenance-free magnetic stirrers, optimized for the transformation of biotechnological production processes into the milliliter-scale, very high time, material and cost savings due to the miniaturization, efficient optimization and development of bioprocesses due to the parallelization.

Sterilizable, space-saving bioreaction block for strictly reproducible fermentation results in the milliliter-scale by precise temperature control from 0 - 65°C, exactly controllable stirring speed up to 4,000 rpm and automatic stirrer monitoring as well as precise non-invasive realtime measurement of pH and dissolved oxygen (PreSens sensor technology).

- Simple handling
- High parallelization and miniaturization
- High time, material and cost savings

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Technical data

Type	bioREACTOR 48
Stirring points	48
Stirring point distance	35 mm
Stirring volume / point	8 - 15 ml
Block bore holes (Ø)	22.5 mm
Reaction vessels (ØxL)	22.5 mm x 87 mm
Stirring power	25/50/75/100 W (4-steps)
Temperature range	0 - 65°C
Stirrer speed	0 - 4,000 rpm
pH range	5.5 - 8.0
Block material	Aluminium alloy, hard-coated
Measurements (WxDxH)	240 x 340 x 145 mm
Weight	approx. 16 kg
Storage conditions	-40°C up to +70°C, 10 - 95%, 500 - 1060 hPa
Protection category	IP 31
Electrical data	230 V / 150 W
Shipping weight (gross)	approx. 27 kg
Order no.	70048

Accessories

Incl. separate control unit

Sterile headspace aeration with variable volumetric flow rates prevents cross and external contaminations. Integrated exhaust gas cooling minimizes occuring evaporation losses. Easy realizable high throughput experiments due to parallelization allow highly reduced development time for new production processes. Miniaturization into the low milliliter-scale (8 - 15 ml) guarantees enormous material and cost savings.

Simple scaling-up of the results into production scale due to precisely defined engineering parameters and the comparable power and oxygen input to well-established stirred tank reactors. The bioREACTOR can be operated as standalone or fully automated by integration into a pipetting robot (Tecan).

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48-FOLD PARALLELIZED MILLILITER STIRRING SYSTEM FOR EFFECIENT DEVELOPMENT OF BIOPROCESSES

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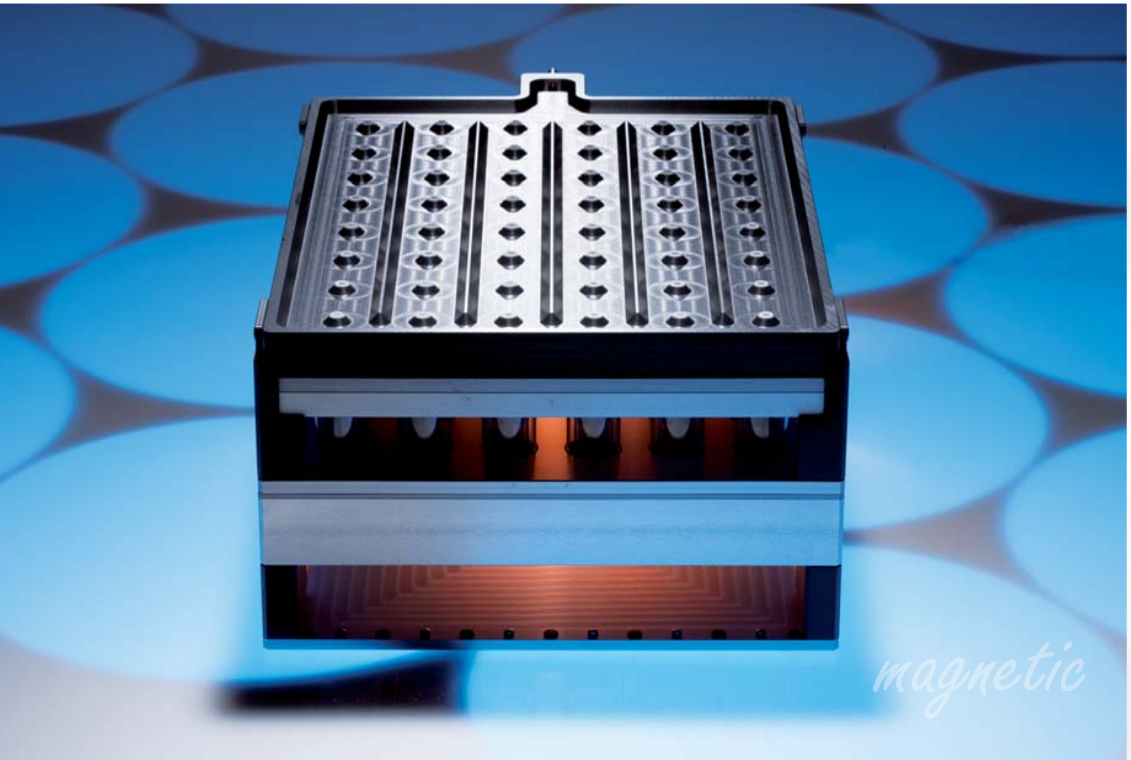
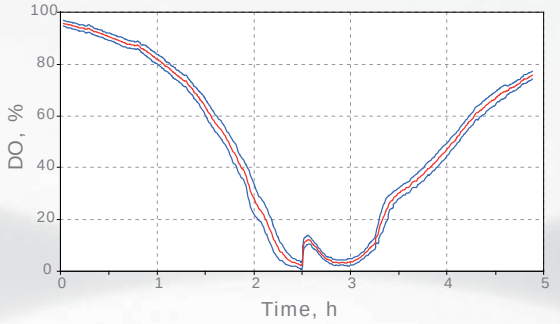
Application examples

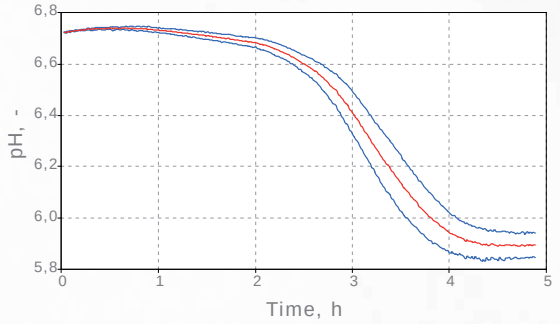
- Cultivation of bacteria, yeasts and fungi (already evaluated for *Escherichia coli*, *Saccharomyces cerevisiae*, *Bacillus subtilis*, *Streptomyces tendae*, *Cupriavidus necator*)
- Evaluation of adequate production strains (strain development)
- Cell growth experiments
- Studies of gene and protein expression
- Viability tests
- Inhibition and toxicity experiments
- Optimization of media
- Optimization of the process design (manual batch or automated batch or fed-batch process design with pipetting robots)
- Enzyme assays
- Quality control
- Also applicable for chemical and enzymatic reactions



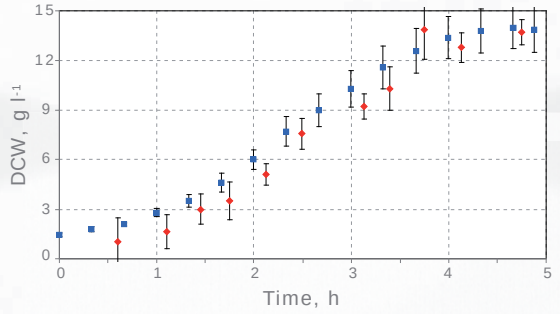
Example: 48-fold cultivation of *Escherichia coli*



- Working volume 10 ml each
- Complex medium with glucose
- Average value of 48 reactors (blue curves: standard deviation)
- Speed: 2800 rpm (* 2900 rpm)
- Automated speed control



- Range of pH sensor: 5.5 – 8.0
- Standard deviation increases at the measurement range limits



- Measurement of optical density (average value of 48 reactors) and estimation of concentration of biological dry mass via calibration function (blue symbols with standard deviation)
- Comparison to technical stirring tank reactor with a volume of 20 liters (red symbols)

Results

- Concentration of dry cell mass of 13 g l^{-1} with *Escherichia coli* in 4 hours
- Adequate oxygen feeding possible (k_La > 0,4 s^{-1})
- Simple prevention of oxygen limitation by adaption of stirring speed
- High parallel and sequential reproducibility
- Simple and secure scale-up (factor 2000: 10 ml - 20 l)

motion

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2mag AGITATION -
the world is moving

Individual units and dimensions on request.

2mag - your contact for sophisticated and also fulfillable solutions for your needs and issues in the range of mixing, tempering and dosing.

Ask us – test us – we are there for you!

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