

Jonas-Cahn-Str. 9
D-53115 BonnPhone +49 228 9833-0
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Internet: http://www.frings.com

Questionnaire PROREACT

Reply Address

Company

Contact person

Street

Postal code

City

Phone

Fax

E-Mail

Plant definition

Required:

 Single fermenter system incl. supply-air filtration

or

 Fermenter row
(if so, please fill in additional questionnaires for each fermenter)

plus:

 Media tank (please observe further details under „Additions“)

 Preparation tank

 SIP-able Volume: ____ L

 Exhaust air treatment

 Sterile filtration

 Exhaust air condensation

 Exhaust air filter heating

 Mechanical defoamer

 Sampling

 via septum

 valve steam-sterilizable

 closed system

 Steam generator for SIP

 Detached CIP station

 Integrated CIP circuit incl. pump

 Media filtration

 SIP-able Cut-off: __ µm Performance: ____ L/h

 Further: _____

Security level according to EU laws on genetic engineering: _____

Clean-room class: _____

Max. installation space L x W x H: _____ m x _____ m x _____ m



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Organism

Shear sensitivity	<input type="checkbox"/> no	<input type="checkbox"/> yes		
Temperature sensitivity	<input type="checkbox"/> no	<input type="checkbox"/> yes	Tolerance	+/- _____ K
Pressure sensitivity	<input type="checkbox"/> no	<input type="checkbox"/> yes	Tolerance	+/- _____ mbar
Supply sensitivity	<input type="checkbox"/> no	<input type="checkbox"/> yes	which	_____
Oxygen demand				_____ mmol/L/h
Anaerobic conditions	<input type="checkbox"/> no	<input type="checkbox"/> yes		

Medium

<input type="checkbox"/> Foam-forming			
<input type="checkbox"/> Aqueous	or Viscosity: _____ mPas		
<input type="checkbox"/> Abrasive	Solids content: _____ g/L	Solid-particle size: _____ μm	

Process definition

Process duration min. _____ h - max. _____ h

Batch Fed-Batch Continuous Other _____

Oxygen demand _____ mmol/L/h

Heat development _____ W/L

Fermenter vessel

Total volume _____ L

Working volume min. _____ L - max. _____ L

Diameter approx. _____ cm

Max pressure area min. _____ bar overpressure - max. _____ bar overpressure

Fermentation pressure min. _____ bar overpressure - max. _____ bar overpressure

Cooling None Double jacket Coiled pipes

Insulation None Open Welded gas-proof

Material 1.4301 1.4404 1.4435 Other _____

Product-contacting surface Untreated Ra < 0,8 μm Electro-polished

Lid-lifting device None Mechanical by hand Automatic

Baffles None Removable Welded

Sight glass None Longitudinal sight glass



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Stirrer system

Type Friborator Rushton Other: _____
 Single Triple

Ratio stirrer diameter / tank diameter d/D: _____

Sealing double mechanical seal, sealing pressure by steam condensate (thermosiphon)
 double mechanical seal, sealing pressure by sterile water (sealing medium filtration)
 magnetic clutch

Speed min. _____ - max. _____ r/min

Max. aerated energy dissipation density: _____ kW/m³

Additions

necessary	Medium	Volume	Vessel is part of plant	Pump is part of plant	SIP	CIP
	Inoculum					
	Substrate 1					
	Substrate 2					
	Caustic					
	Acid					
	Antifoam					
	Other: _____					



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Measurements and controls

Necessary	Measurand	Measurement range		Archived	Controlled	Unit of measurement
		Standard	Customized			
	Cultivation temperature	28,0 ... 42,0				°C
	Sterilization temperature	121,0 ... 124,0				°C
	Fermenter pressure	-1,00...3,00				bar overpressure
	pH value	2,00...12,00				-
	Dissolved oxygen	0,0...120,0				%
	Supply air volume					L/min
	Stirrer speed	0...100				%
	Substrate supply					mL/min
	Optical density					-
	Foam level	Switch point fix				-
	Fill level					L
	Weight fermenter					kg
	Weight preparation substrate					g
	CO ₂ exhaust gas	0,00...12,00				%
	O ₂ exhaust gas	0,00...25,00				%
	Alcohol concentration	0,00...6,00				%
	Other: _____					
	Other: _____					
	Other: _____					

Automation

- None
- Control box with integrated amplifiers (pH, pO₂, foam), touch screen 10"
- Control cabinet Siemens S7 with decentral amplifiers (on customer request), touch screen 15"
- Interface to controlling software Interface type: _____

Directives

- EU Pressure Equipment Directive / Pressure Vessel Ordinance
- ASME Pressure Equipment Directive / Pressure Vessel Ordinance

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Documentation

Perusal and delivery of the following documents are necessary:

- Engineering documents
- Installation documents
 - Materials certificates 3.1
 - Certifications of re-marking
 - FDA conformity declaration of product-contacting plastic materials
 - Welding reports
 - Surface measurement protocols
- Function documents
- Sterile test documents
- Calibration documents

Services

- FAT
- Assembly at site
- Start-up at site
- SAT
- Training

Remarks

Do you have any questions ?
You can reach us by telephone at +49 – 228 – 9833-0 or via e-mail at marketing@frings.com.
On the phone, or in the e-mail subject line, please kindly mention the keyword
„PROREACT Questionnaire“.
Thank you !