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Fermentor

Fermentor:

It is an apparatus which provides the optimal conditions to grow some microorganisms, such as fungi, bacterium and yeasts. Therefore, microorganisms shall have more & better growth and actions in those especial conditions. By use a fermenter, microorganisms can be duplicated in more than ten generations, before the transmission. By adding some yeast to carbohydrates, fermentation will be available with heat and pressure and, under a closed situation, so the result will be alcohol. By this apparatus, we are able to control environmental parameters, such as PH, temperature and foam, continuously.

Fermenters manufactured by Rafa Esfahan Company :

- Operating pressure up to 10 bar
- Operating temperature up to 250 C
- Equipped with PLC controller system

Fermentor	
Model	Capacity (in liter)
RF-US	75
RF-S	150
RF-M	300
RF-L	500
RF-UL	1000
Other volumes are custom-made	

The Fermenters usages:

- Production active material, many kinds of drugs and vaccines for some diseases (e.g. cancer, AIDS and hepatitis)
- Production different kinds of serums
- Production some poisons (e.g. diphtheria by suspension incubation in the fermenter)

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Fermentor Technical Specifications

Construction	**Aspect Ratio: 3:1**			**Code Rating: ASME**		
	Material Of Construction : 316L SS			Vessel access: spring-assisted man way		
	Finish: 20 Ra [internal /external]. optional : electro polished interior					
Agitation	Drive : Bottom or Above Drive , Magnetic or mechanical seal					
	Impeller: Rushton		Baffles: removable,316L stainless-steel			
	Speed(RPM)	50-500	45-450	50-400	30-300	30-350
	AC Motor Size(hp.)	1 1/2	5	5	10	20
Ports	Head plate	1 1/2" tri-clamp (DP transmitter/rupture disk/pressure transmitter)				
		2" tri-clamp (spray balls/exhaust condenser/level probes/septum)				
	Upper side wall	3/4" NA-Connect (gas overlay)		1/2" tapered tri-clamps (SIP/CIP addition valves)		
		1 1/2" tapered tri-clamp (pressure gauge)		4" tapered tri-clamp (viewing port)		
	Lower Side Wall	3/4" NA-connects (RTD/thermoswell)				
		25mm Ingold ports (pH/spare DO)				
		1 1/2" NA-connect (sample valve/sample system/sparge)				
	Bottom	1" Drain valve	Drain flange		1 1/2" Na-connect Lower DP transmitter	
Piping Skid	Material Of Construction :316L SS			Gaskets/EPDM and Silicon		
	Air line	Line comes equipped with Rota meter, SIP inlet filter, and sparger. options include: ➢ Thermal mass flow controller ➢ Dual inlet air filters (in series) ➢ Oxygen supplementation ➢ Dual inlet air filters w/integrity – test ports ➢ Overlay valve				
	Exhaust line	Line designed for minimal backpressure, unregulated, and comes standard with heated exhaust filter and manual backpressure regulator. Option include: ➢ Automatic back pressure control ➢ Dual exhaust filters (in parallel) ➢ Exhaust condenser ➢ Dual exhaust filters w/ integrity-test ports				
	Temperature control line	All systems come with automatic sterilization as the standard. The line is designed to designed to achieve temperature rises of 1°C/minute. Option include: ➢ Glycol Heat Exchanger				
Sensor options	pH/DO kit			Redundant probe kit		
	Retractable probe housing			Redox probe and transmitter		

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Controller	**Each system comes standard with an industrial (PLC) programmable-logic controller, designed based upon GaMP guideline , and a large color touchscreen operator interface that is used to access multiple screens and functions.**
Additional Option	➢ 21 CFR 11 compliant digital chart record ➢ Novaseptum sampling systems ➢ Inputs for ancillary devices ➢ User-definable fixed speed pumps ➢ Variable speed pumps ➢ Foam/level kit ➢ Vessel volume via differential pressure ➢ 316L SS addition vessels ➢ 7- or 12- port septum ➢ CIP interface / spray balls ➢ Load cells ➢ Marine and pitched-blade impellers ➢ Validation packages ➢ Scales for addition vessel