



INTEGRATED BIOPHARMACEUTICAL PROCESS SOLUTIONS

www.komalwater.com





- » Komal **Bio-engineering** provides bioreactor for whole gamut of needs from pilot plant to full-fledged production.
- » We have rich experience in anaerobic, facultative anaerobic and aerobic fermentation of various microorganisms in the Biopharmaceutical industry. Our solutions also include process design, automation control and verification of suspension cell bioreactors.
- » We are known for our robust, reliable and high quality equipment's, from cell bioreactors to microbial fermenter systems.

FEATURES :

- **Feeding Pipelines** : Multiple aseptic feeding pipelines required for all kinds of nutrients.
- **Surface/Deep Aeration Device** : Control of agitation and ventilation of various gases, to reduce the impact of bubble rupture on cells.
- **Exhaust Device** : Multistage exhaust as per company requirements.
- **Temperature Control** : Precise temperature control during fermentation process with an accuracy of $\pm 0.1^\circ\text{C}$.
- **Aseptic Sampling** : Special sampling bottle & sampling valve for aseptic sampling.
- **Fully Automatic CIP and SIP** : For the cleaning and sterilization of tanks, pipelines inlet and exhaust devices;
- **Accurate pH Control** : Automatic adjustment of pH using peristaltic pumps and pH transmitters.
- **Accurate Foam Control** : Control of foam sensor and defoaming pump for automatic detection and defoaming;
- **Multi-function Touch Screen Operation**: Intuitive display of process and running status, real-time data recording of pH, DO, liquid level, auto valve, curve drawing and alarm functions;
- **Multi-level Password Protection**: Electronic signature and data audit trail in compliance with **FDA 21CFR** part 11, implemented in accordance with the requirements of **GAMP5**.

BIOPHARMACEUTICAL MODULAR SYSTEM SOLUTIONS



Our bioprocess modular solutions include solutions for applications like human vaccine process, animal vaccine process, **genetic recombinant DNA** & monoclonal antibodies process.

All the above applications mainly include vessels like media preparation, buffer preparation, harvesting, inactivation, purification, emulsification system, etc.

BLOOD PRODUCTS	HUMAN VACCINE	ANIMAL VACCINE	GENETIC COMBINATION / MONOCLONAL ANTIBODY
Plasma Thawing System	Fermentation System	Fermentation System	Fermentation System
Cold Perception System	Bioreactor	Bioreactor	Bioreactor
PCC adsorption System	Harvesting system	Homogenization System	Centrifugal System
PCC pre-production system	Salting out system	Centrifugal System	Homogenization System
PCC post-production system	Detoxification system	Filtration System	Chromatography System
Fibrous pre-Production system	Combined System	Chromatography System	Ultrafiltration System
Combined System	Seedling System	Combined System	Combined System
Fibre post-Production system	Preparation System	Ultrafiltration System	Inactivation System
FVIII pre-Production system	Ultrafiltration System	Inactivation System	
FVIII post-Production system	Chromatography System	Emulsification System	
Albumin reaction system		Preparation System	
Globulin reaction system			
Protein crude system			
Protein refining system			
Pap inactivation			
Hatch System			
Ultra filtration system			
Chromatography system			
Sterilization system			

KOMAL AS YOUR PARTNER

Komal water, with komal bioengineering India, is a research oriented process engineering company. Komal water, with its experience of over **40 years** and manufacturing facility of over **75000 sq.ft.**, specialises in integrated Biopharmaceutical Process solutions.

Komal delivers industry leading bespoke turnkey systems uniquely providing clients with a single source solution for their **high purity** systems requirements. Komal, with its in-house fabrication and automation capability is able to provide complete validation and documentation services to its clients.

Komal, with its rapid growth due to focus on **technological** innovation through the continuous R&D has over **4000 installations** in over **40 countries** world wide.



Komal aims to strengthen its position as an international leader for Biopharmaceutical engineering processes, pioneering new approaches to our products with a continued commitment to improvement and innovation in Biopharmaceutical Process systems.



KOMAL
WHEN QUALITY MATTERS

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