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Succeed with Quality

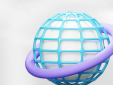


BIOJENIK ENGINEERING

Towards Bio engineering Technology & Solutions

★ ★ ★
Custom Bioprocess Systems for Lab, Pilot & Industrial Applications
★ ★ ★

Biojenik Engineering has been providing innovation and
reliable bioprocess engineering solution for
over 15 years



www.biojenikengineering.com



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About the Company

- Founded in 2009 in Chennai, India
- Specialized in design and manufacture of bioprocess instruments
- Serves biotech, pharma, academic, and industrial R&D sectors

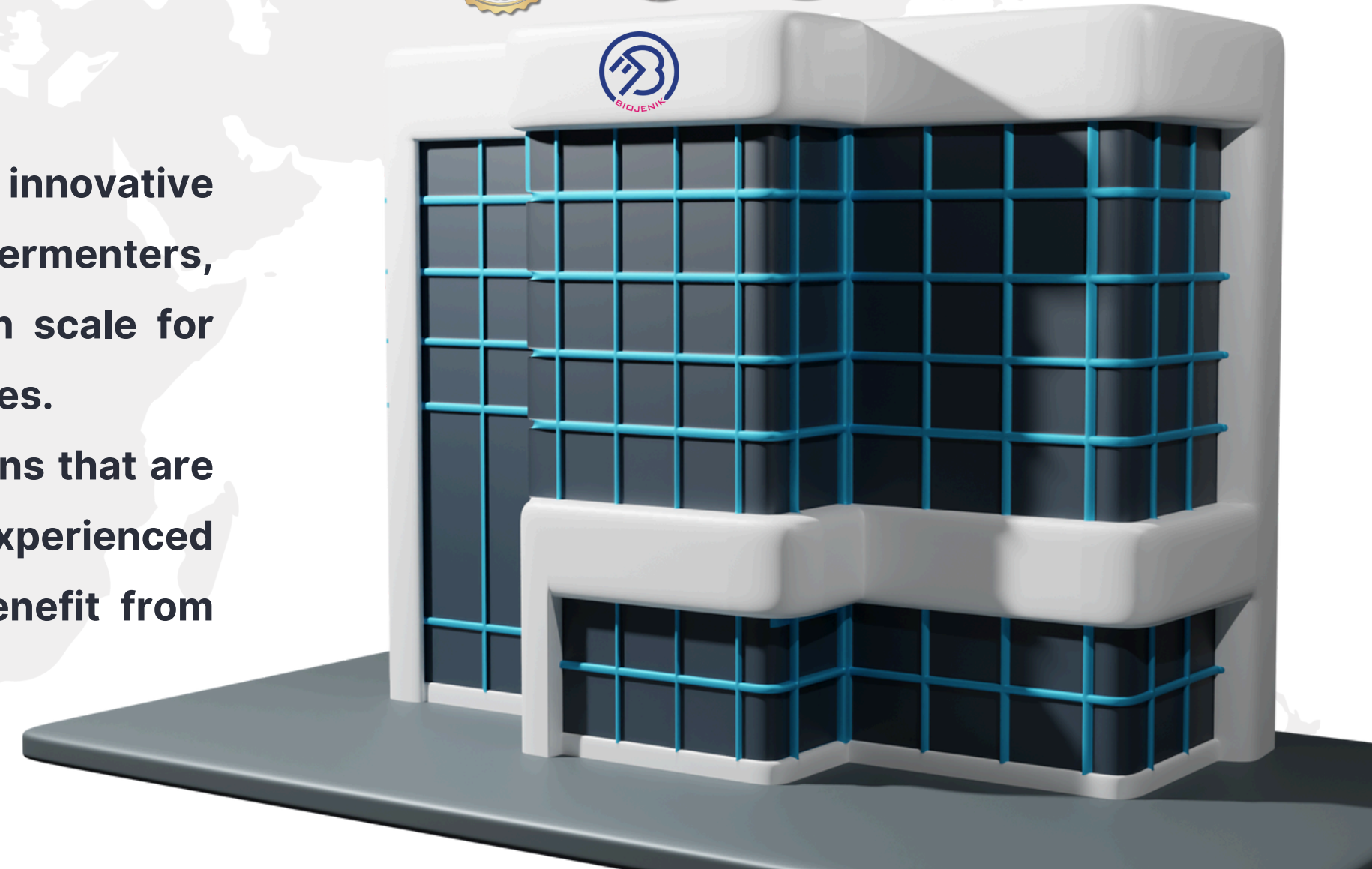




Since 2009



- Biojenik Engineering specializes in providing innovative bioprocessing solutions, including fermenters, bioreactors, filtration systems and production scale for research, development, and production purposes.
- We are dedicated to offering high-tech solutions that are accessible to both students and experienced professionals, ensuring that everyone can benefit from our cutting-edge technology and expertise.





R.Shankar,
CEO and Founder



As a customer-focused organization, we are always looking for ways to improve and innovate, and we are constantly investing in research and development to stay at the forefront of bioprocessing technology. Our goal is to help our customers achieve their bioproduction objectives and drive the development of new, life-changing therapies and bioproducts.

We are committed to providing sincere, reliable services and tools to maintain premium performance, and maximum safety of our instruments. This includes a comprehensive range of carefully designed service solutions performed by our dedicated Application, Training, and Technical Service teams all over India. With our services we complement our product portfolio with Application Support, Seminars and Training, Technical Support and Maintenance. Technologically demanding products require first-class service to ensure that the results they produce are optimized.

The services range from technical support and troubleshooting to delivery of replacement parts on short notice and customer-specific maintenance programs. Customers can rely on Biojenik Engineering service for superior support for their bioprocess products, beginning with startup of the system. Upstream and downstream equipment design and manufacturing customized engineering design and product development.

Our Mission and Vision



Mission

- At Biojenik Engineering, we aim to: Minimize operational risks, Reduce engineering costs, Improve durability and efficiency
- We focus on R&D-driven solutions for the process industry.
- Our patented designs, developed with IIT, reflect our commitment to innovation.
- We welcome partnerships to build a strong platform in bioengineering technology.

Vision

- One of the best customized Bio Engineering solution provider and developing multiple patent technology for the Bio Engineering Industry.

Core Values:

- Quality | Innovation | Sustainability | Customer-centricity



MILESTONE

ESTABLISHMENT

Founded in 2009, Biojenik Engineering has been a leader in innovative bioprocess engineering solutions for over 15 years.



INNOVATION

Introduced our first bioreactor in 2010, revolutionizing bioproduction processes and setting the stage for future advancements.



EXPANSION

Expanded our portfolio in 2011 to include fermenters, bioreactors, and software solutions for comprehensive bioprocessing solutions.



PARTNERSHIPS

Formed strategic alliances with top biotech and pharmaceutical research institutions in 2015, broadening our reach and impact.



GROWTH

Appointed our first exclusive dealer in Delhi in 2018, enhancing our ability to serve clients nationwide.



RECOGNITION

Acknowledged in 2020 for installing customized equipment under NDA for leading research and pharma industries, showcasing our commitment to innovation and reliability.



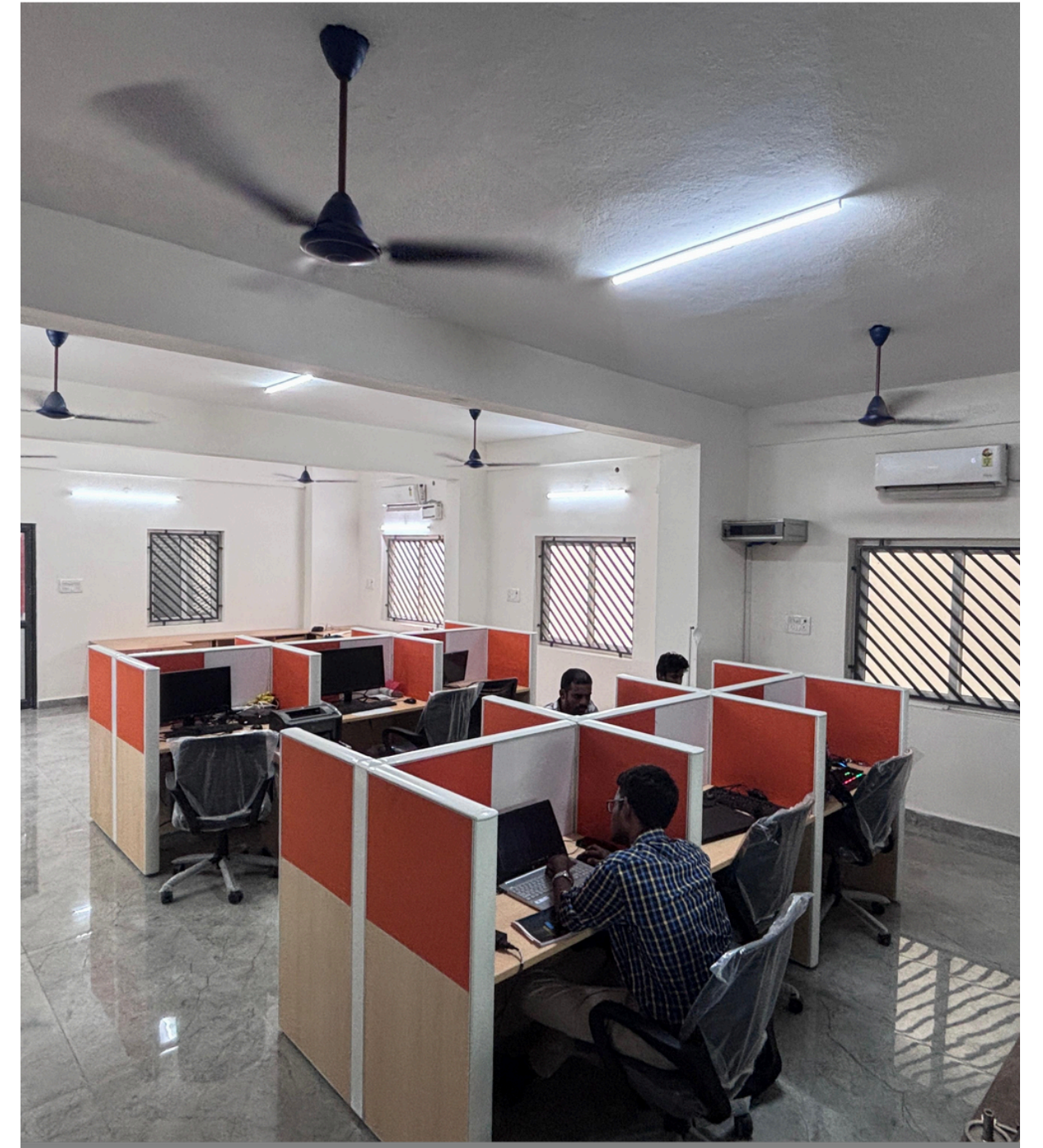
Industrial Manufacturing Facility

Exterior Overview



Industrial Manufacturing Facility

Interior Overview





Biojenik Engineering – Work Flow Process



1. Project Initiation

- Client Requirement Gathering
- Feasibility Study & Site Assessment
- Proposal & Quotation Submission



2. Design & Engineering

- Customized Design & Drafting
 - AutoCAD / Plant 3D layouts
- Detailed Engineering Documentation
 - P&ID, GA Drawings, BOM



3. Fabrication & Assembly

- Raw Material Procurement (SS 304 / 316L)
- Rolling & Forming
- Plasma Cutting / Laser Cutting
- TIG / Laser Welding
- Machining and Fit-Up
- Grinding & Polishing



Welding



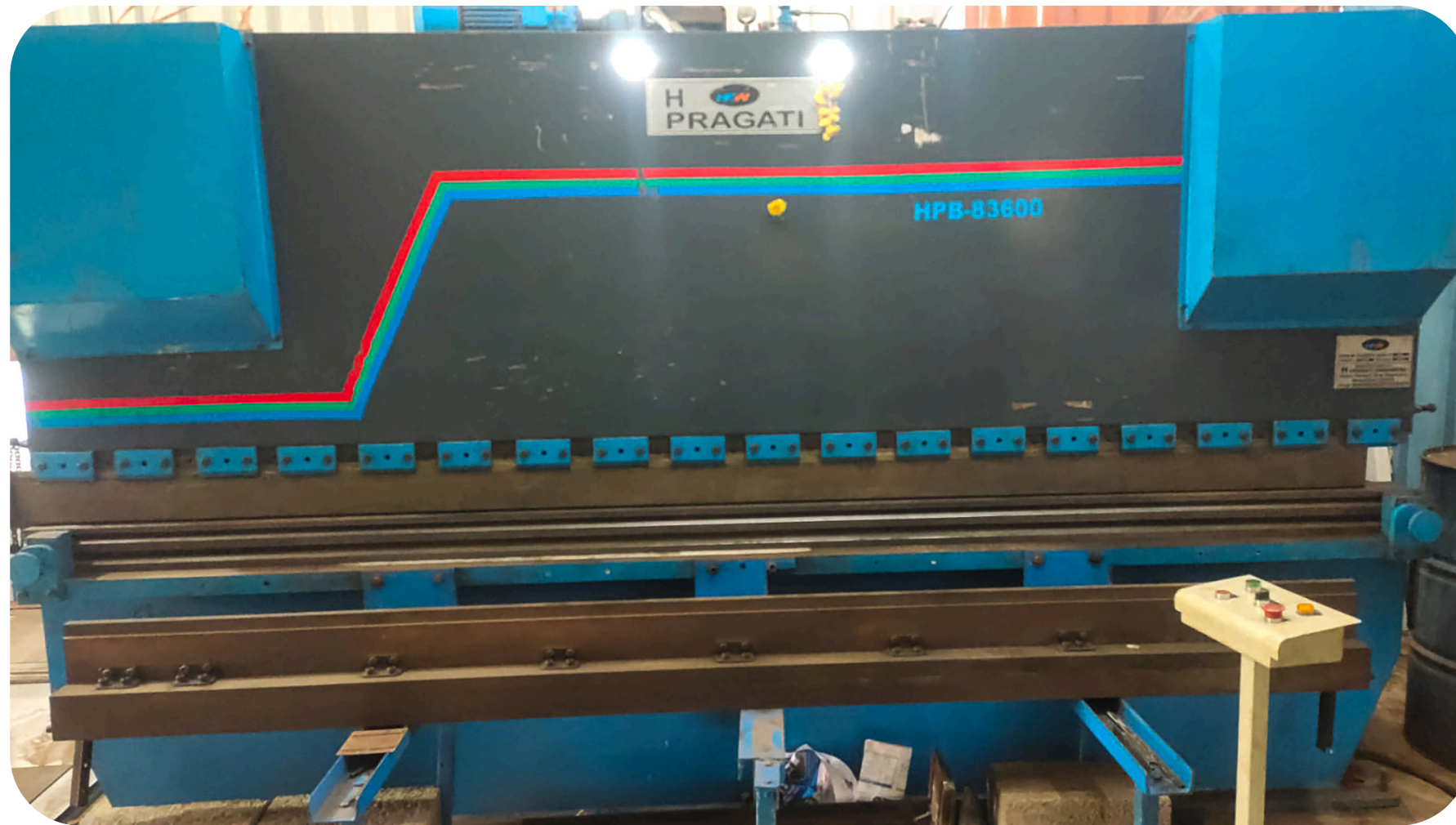
Polishing



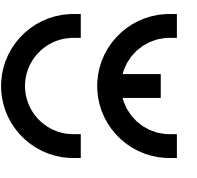
Grinding



Our associate site for fabrication activities



LASER CUTTING AND BENDING MACHINE



Our associate site for fabrication activities



ROLLING MACHINE



4. Quality Inspection & Testing

- **Dimensional Check**
- **Pressure Test**
- **Welding Radiography**
- **Passivation & Surface Finish**
- **Final QA/QC Report**





⚙️ 5. Electrical & Control Integration

- Panel Design & Wiring
- PLC / HMI / SCADA Programming
- Sensor & Actuator Integration
- Simulation & Dry Run Testing



⚙️ 6. Documentation & Validation

- IQ – Installation Qualification
- OQ – Operational Qualification
- DQ – Design Qualification
- FAT – Factory Acceptance Test
- SAT – Site Acceptance Test
- QA/QC Compliance Documentation





7. Installation & Commissioning

- **On-site Equipment Installation**
- **Wiring & Interconnection**
- **Utility Hookup**
- **Trial Run & Final Commissioning**

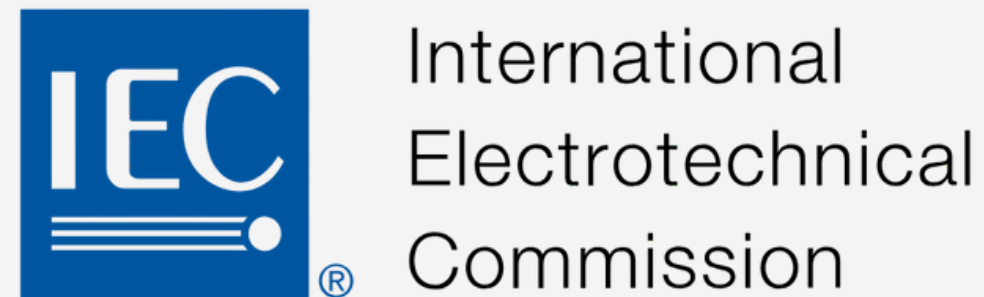


8. Service Support & AMC

- **User Training**
- **Post-Installation Support**
- **Annual Maintenance Contracts**
- **Remote Troubleshooting**



FDA
21 CFR 177.2600

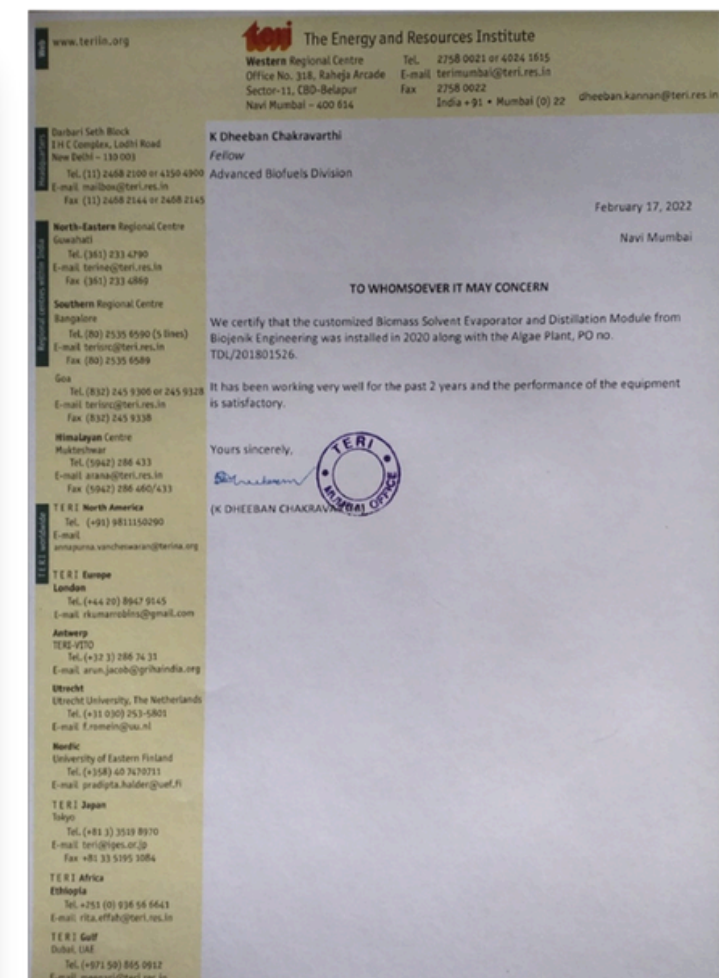
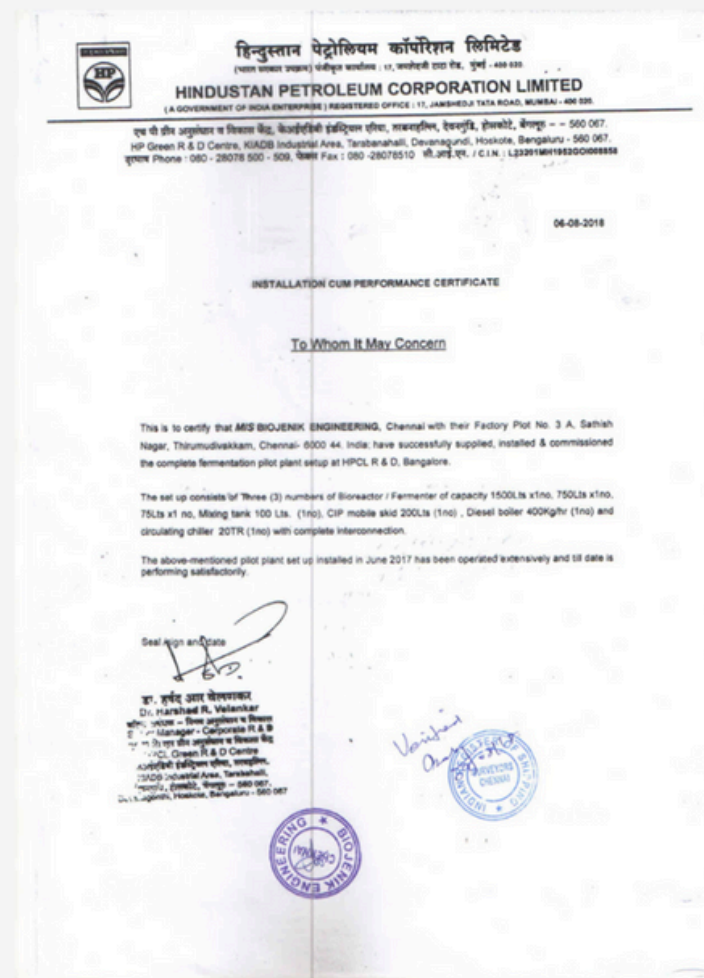


- **ASME – BPE 2022 for vessel and piping manufacturing**
- **ASME Section VIII (Division 1) for pressure vessel.**
- **US FDA 21 CFR 177.2600 for gaskets and O-rings**
- **EN/IEC-60204 and UL 508 for electrical work**
- **IEC 60529 Standards**
- **EU GMP Guide Annex 11 for computerized systems**
- **US FDA 21 CFR Part 11 for automation**



Testimonials

Hear the Voices of Delighted Customers





Achievements



Experience

Over 15 years of experience in bioprocess engineering



Bioprocess Systems Delivered

600+ systems delivered across India and abroad



Established as a Trusted Brand

Recognized for delivering innovative and reliable bioprocess systems across biotech and pharmaceutical sectors.



Global Industry Adoption

Our equipment is trusted by top biotech and pharma companies across India and international markets.



Successful Deployments

Installed in R&D labs, pilot plants, production facilities, and academic institutions.



Engineering Excellence

Developed a wide range of high-performance bioreactors, fermenters, and custom solutions.



Optimized Bioproduction

Proven to improve yields, reduce costs, and enhance overall process efficiency.



Experienced Technical Team

Powered by expert engineers, scientists, and technicians focused on innovation.



Exceptional Client Support

Strong after-sales service, AMC support, and custom client solutions.



Continual Innovation

Ongoing investment in R&D and process development to meet evolving industry needs.

SCADA SOFTWARE

Siemens WinCC
Industry-leading control system

Lifetime Support
License and technical assistance

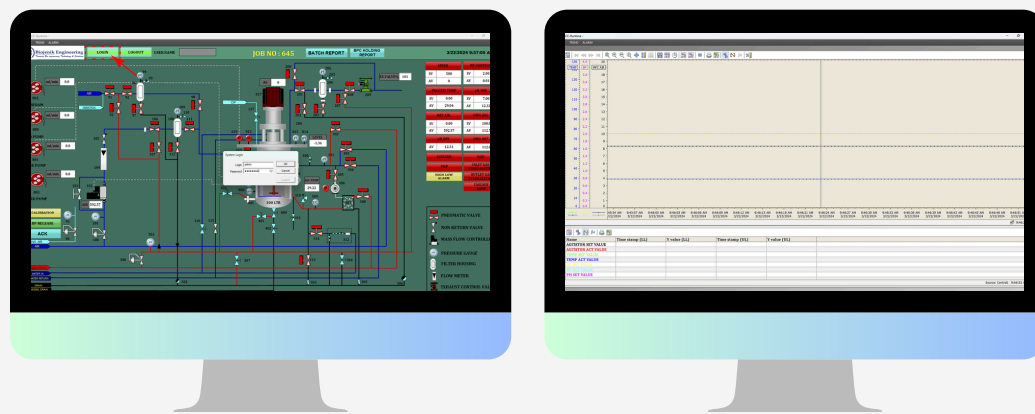


Real-time Monitoring
Comprehensive process visualization

Compliance
21 CFR Part 11 compliant

SCADA SOFTWARE

Biojenik Engineering's SCADA software is designed for real-time monitoring and control, offering a range of features to improve efficiency and ensure compliance.



- **Software:** Siemens WinCC.
- **Simulation and Auto-Tuning:** Generates random process values for simulation and auto-tuning.
- **Third-Party Integration:** Free OPC server for third-party device integration.
- **Remote Operation:** Webex-based remote operation/control of setpoints.
- **Customized Interface:** Personalize display to show Process, Profiles, Set Points, and Cascade.
- **Batch Management:** Manage batches and track them using tags.
- **Access Control:** Different access levels for enhanced security.
- **Dosage Tracking:** Monitor and record material consumption during production.
- **Real-Time Data Recording:** Automatic recording and trending of setpoints and measurement values.
- **Data Export:** Export data to Excel for analysis and reporting.
- **Data Comparison:** Compare and analyze data for improved decision-making.
- **Event Alarms & History:** Alerts for issues, historical data access, and ANSI-18.2 compliant alarm management.
- **Audit Trail:** Record-keeping compliant with 21 CFR Part 11 standards.
- **Lifetime Support:** One-time license with lifelong updates and support.

HARDWARE

HARDWARE/AUTOMATIC SEQUENCES:

Automatic sequences are performed in the PLC (Programmable Logic Controller), which also performs the data I/O. All valve systems which are relevant for the sterilization procedures are automated.



OUR VALUABLE CLIENTS



Organizations That Trust Us



हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड
Hindustan Petroleum Corporation Limited
(A Maharatna Company)



OUR PRODUCTS

Transforming Industries with Our Revolutionary Product Solutions

Lab-Scale Bioreactors & Fermenters

Autoclavable Models

- Parallel Bioreactor
- Autoclavable Bioreactor
 - Passer A – Standard Autoclavable Model
 - Passer B – Heating Blanket Model
 - Passer C – Chain Reactor Model

In-Situ Glass Reactors

- Jenik Hyperion – Glass Reactor
- Hyperion SS – Floor Mounted SS Model

Customized Bioreactors

- Airlift Bioreactor
- Photo Bioreactor
- Bio Calorimeter
- Algae Open Cultivation System

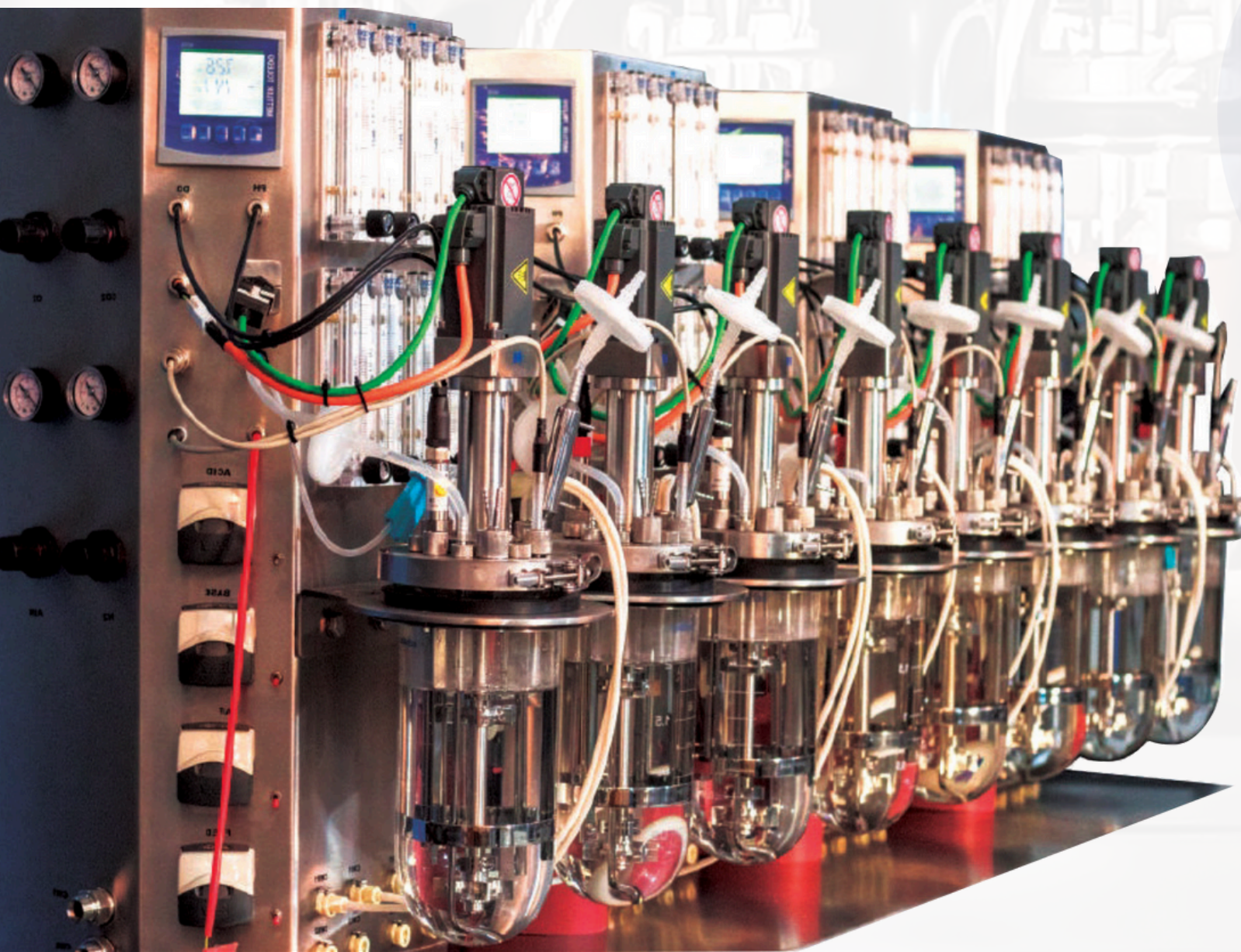
Pilot and Production Scale Equipment

- Laboratory / Pilot / Production Scale Fermenter
- High Pressure Reactors
- Process Vessels
- Exit Gas Analyzer
- Filtration Systems TTF & Rotor
- CIP system & SIP system
- Bio Hydrogen (H₂), Methane (CH₄), Biowaste, Agri-Waste Production Systems

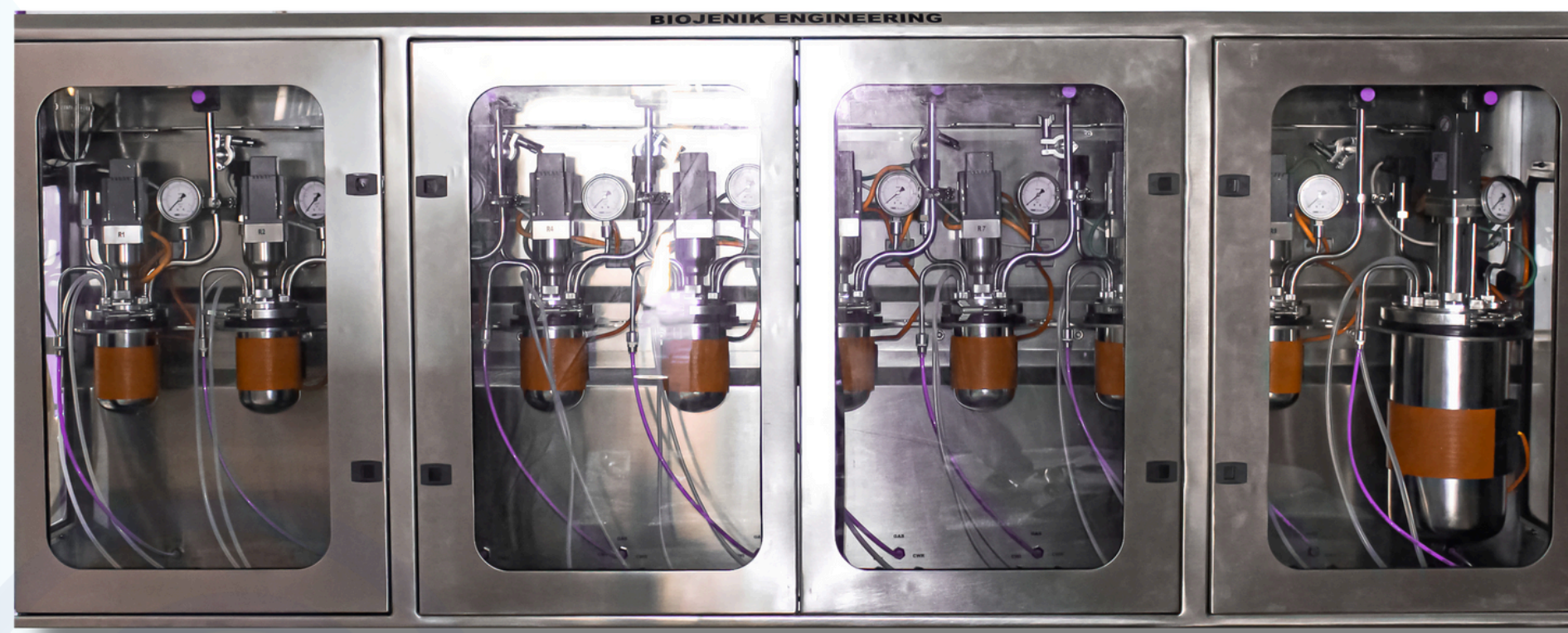


PARALLEL BIOREACTOR

Parallel Bioreactor systems are designed to meet demanding requirements in both research and process development. Their modular design addresses the unique requirements of various applications in both cell culture and microbiology. It is ideal for cell line/strain screening and media optimization.



Specification	Details
Vessel	Glass (autoclavable), SS 316L; Single/Jacketed; SS Top Lid
Volume	500 mL, 750 mL, 1.5 L, 2.5 L (50–70% working volume)
Agitator	Rushton / Marine / Pitch; 25–2000 RPM; Servo/DC motor
Skid Options	2–12 vessels; single/double skid layouts
Heating/Cooling	Pad heater or jacketed system
Perfusion Filter	Internal/External; 5–20 μ m (customizable)
Sampling System	Glass dip tube sampling
Ports & Sensors	4mm–12mm; PG 13.5 for probes
Aeration	Tube/Ring/Sintered spargers; 0.2 μ m filter
Gas Mixing	Air, O ₂ , N ₂ , CO ₂ (1–4 gas options); rotameter/MFC (optional)
Feeding System	4 fixed + 1 variable pump; 0.004–40 mL/min
Control Module	pH, DO, CO ₂ , Antifoam, OD, Redox (auto cascade via SCADA)
SCADA	Real-time control, data logging, remote access via PC/mobile
Add-ons (Optional)	Exit Gas Analyzer, Gravimetric Feed, Light Hood, Chiller, Autoclave





AUTOCLAVABLE BIOREACTOR

Biojenik Engineering Passer A-C offer wide range of autoclavable bioreactor for cell culture application and fermenter for microbial application. Our modular design advanced controller software enhance the process optimization & design of experiments.

A

Standard Autoclavable Model

B

Heating Blanket Model

C

Chain Reactor Model





Specification	Details
Vessel	Glass (autoclavable), SS 316L; Single/Jacketed; SS Top Lid
Volume	1.5L–18L (Working Volume: 1L–15L)
Agitator	Top-driven (Lip Seal / Magnetic Drive), Rushton / Marine / Pitch blade /BT6 ; 25–1600 RPM; Servo/DC motor
Skid Options	Compact benchtop system with SS316 frame
Heating/Cooling	Heating pad + cooling finger / Jacketed vessel
Perfusion Filter	Cell Retention Filter (optional for perfusion/continuous mode)
Sampling System	Hygienic glass dip tube
Ports & Sensors	4mm–19mm; PG 13.5 for probes
Aeration	Tube/Ring/Sintered spargers; 0.2 μ m filter
Gas Mixing	Air, O ₂ , N ₂ , CO ₂ (1–4 gas options); rotameter/MFC (optional)
Feeding System	4 fixed + 1 variable pump; 0.004–40 mL/min
Control Module	pH, DO, CO ₂ , Antifoam, OD, Redox (auto cascade via SCADA)
SCADA	Real-time control, data logging, remote access via PC/mobile
Add-ons (Optional)	Exit Gas Analyzer, Gravimetric Feed, Light Hood, Chiller, Autoclave



JENIK HYPERION - INSITU

High Flexible Small bench system is suitable for research and Industry for both Microbial and cell culture applications. Ideal system for trouble-free operation. Well-equipped for batch, fed-batch & continuous. Flexible control system for customized function.



Specification	Details
Vessel	In situ sterilizable glass vessel or SS with ports and plugs
Volume	2.4L / 3.7L geometric; 0.5–1.7L / 0.7–2.5L working volume
Agitator	Rushton (radial), Marine & Pitch blade (axial - optional); Top/Bottom drive, 25–2500 rpm, lip seal or magnetic; DC/Servo motor
Heating/Cooling	Electrical heating & cooling finger
Perfusion Filter	Internal/external filter; 5–20µm (optional)
Sampling System	Glass dip tube with hygienic back-pressure sampling (optional)
Ports & Sensors	4mm–12mm; PG 13.5 for probes
Aeration	Tube/Ring/Sintered spargers; 0.2 µm filter
Gas Mixing	4-gas MFC/Pulse valve system (Air, O ₂ , N ₂ , CO ₂); overlay support
Feeding System	4 fixed + 1 variable pump; 0.004–40 mL/min; 0.1–100 RPM
Control Module	pH, DO, CO ₂ , Antifoam, OD, Redox (auto cascade via SCADA)
SCADA	Real-time control, data logging, remote access via PC/mobile
Add-ons (Optional)	Exit Gas Analyzer, Gravimetric Feed, Light Hood, Chiller, Autoclave

JENIK HYPERION SS

High Flexible floor mounting labscale fermenter suitable for research and Industry for both Microbial and cell culture application. Ideal system for trouble free operation. Well equipped for batch, fed batch & continuous. Flexible control system for customized function.





JENIK HYPERION SS



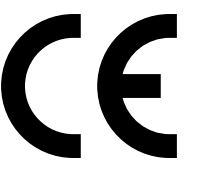


Feature	Details
Vessel Options	Glass (in-situ sterilizable) or SS vessels; volumes from 3L to 30L
Working Volume	E.g., 3L vessel = 2L working; 30L vessel = 25L working
Temperature Control	10°C to 135°C; jacketed system; optional electric heater
Pressure Rating	Vessel: up to 4 bar; Jacket: 5 bar; Operating pressure: 2.5 barg
Material & Finish	SS 316L (wetted); SS 304L (non-wetted); mirror finish ($Ra \leq 0.4 \mu m$)
Agitation System	Top/bottom motor; 50–1200 rpm; Rushton, Marine, or Pitch Blade impellers
Aeration System	Air standard; optional 2/4-gas mixing (Air, O ₂ , N ₂ , CO ₂); up to 2 vvm
Control System	PLC + HMI (10"); optional SCADA; DDC for key parameters
Sensors	Pt100 (Temp), pH, DO; optional: Redox, CO ₂ , Antifoam, OD, Turbidity
Sampling/Harvesting	SIP diaphragm sampling valve; flush bottom harvest valve
Dosing Pumps	Fixed or variable-speed peristaltic (0.1–40 ml/min); sterile options
Sterilization	Direct steam or hot water via jacket; full SIP and CIP
Utility Systems	Chiller (2TR), Compressor (1HP/2HP), Steam boiler (10–20 kg/hr)
Instrument Compliance	GAMP compliant; logging, alarms, cascade control
SCADA & Remote Monitoring	JENIK SCADA, recipe automation, remote access, OUR/CER, Excel export

AIRLIFT BIOREACTOR

Airlift bioreactors are an alternative to mechanically agitated systems that reduce shear stress and heat generation by eliminating the mechanical agitator. Airlift systems are similar to bubble column reactors where air transfer, internal circulation and mixing are achieved by bubbling air.

Airlift bioreactors contain an inner draft tube that creates the drafting force required for liquid circulation and possible improvement of bulk mixing. Utilization of an airlift system may also demonstrate cost savings in the elimination of a mechanical agitator and from the reduction of extra cooling requirements.





Feature / Specification	Details
Vessel Types	Glass (In-situ & Autoclavable), Stainless Steel
Volume Range	1L to 2000L+ (customized as per need)
Vessel Geometry	Diameter:Height ratio of 1:7 to 1:10
Aeration	0.1–20 µm (Sintered Sparger), 1–3 mm (Fine Bubble Sparger)
Mixing System	Gas riser with Draft Tube or Baffles
Shear Sensitivity	Designed for low shear – suitable for sensitive cells
Light Illumination	Adjustable LED (0–100%), Multiple wavelengths for phototrophic organisms
Gas Distribution	Multiple risers ensure 100% gas distribution
Circulation Mechanism	Continuous due to density gradient between riser and downcomer regions
Remote Access	Operable via PC or Tablet
Ports and Fittings	Standard mechanical plugs, ports, and fittings
Measurement & Control	Fully integrated with sensors and automation for process control
Application Range	Microbial & cell culture, phototrophic organism cultivation
Gas Bubble Formation	Micron and fine-hole spargers for effective aeration
Scalability	Available in lab-scale to pilot and industrial scale



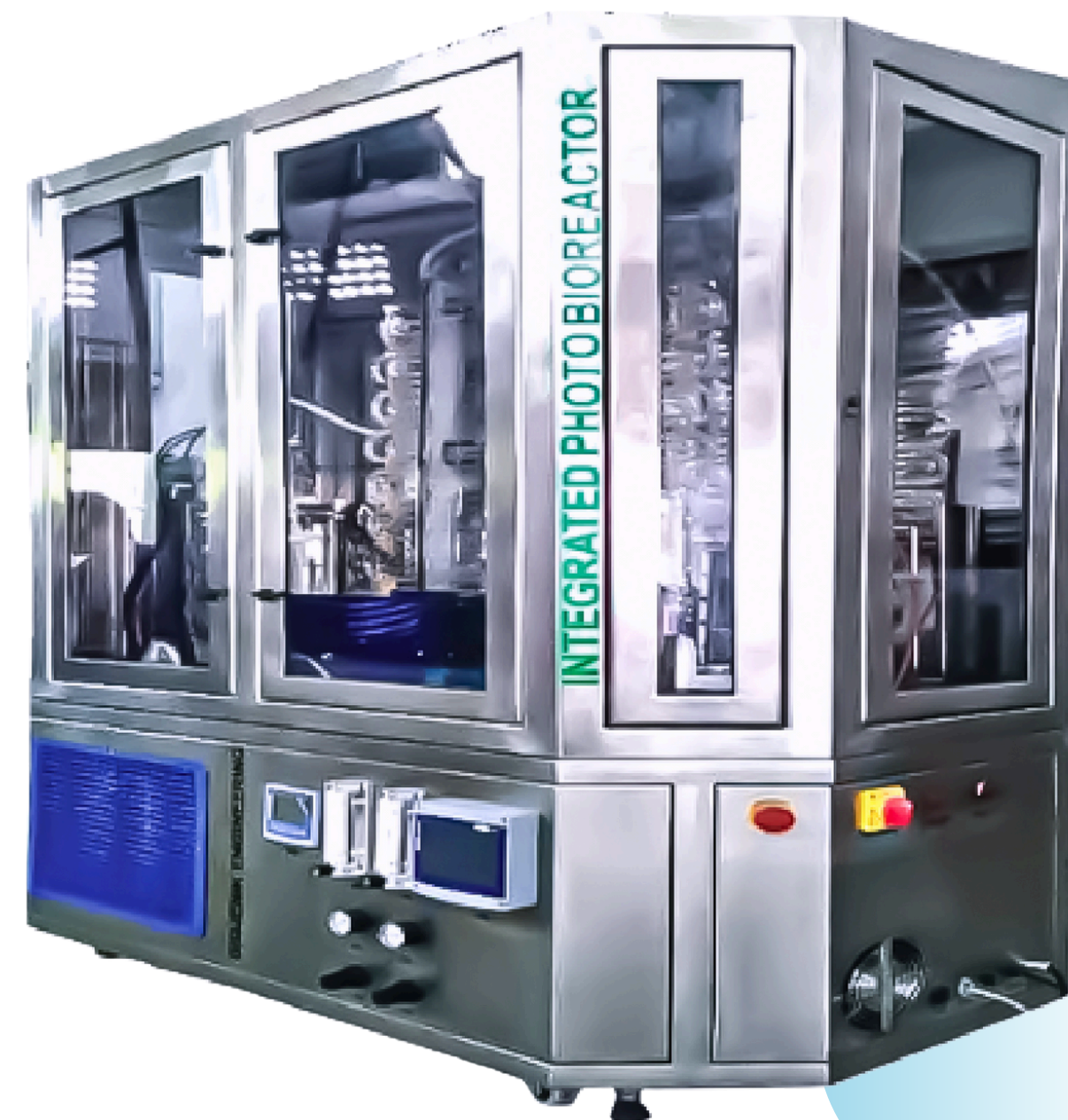
PHOTO BIOREACTOR

Photo Bioreactor (PBR) is a bioreactor that utilize a light source to cultivate phototrophic microorganisms. Biojenik supplies photo bioreactors from lab scale to production scale. The successful scaling of our design principles is founded on the application is high-value glass tube also in Stainless Steel. We do manufacture High-end in-situ sterilizable research photo bioreactors for high-level R&D also for the production scale capacity for outdoor installation.





Feature / Specification	Details
Design	Closed-system; tubular, flat-panel, vertical-column configurations
Volume Capacity	2L to 1000L (Lab to industrial scale)
Vessel Material	Borosilicate glass, Stainless Steel, Acrylic (UV-resistant)
Light Source	LED, Fluorescent, Flash/Pulsing (Up to 10kHz duty cycle)
Light Wavelength & Intensity	400–750 nm; 5000 to 30000 Lux
Illumination System	Internal/external panels; Jacket, Panel, Liquid-immersed, Open-frame
Mixing Mechanism	Air bubbles, Tubular flow, Low shear impeller
Aeration	Microbubble/fine-hole spargers for efficient gas exchange
Gas Control	Automated blending of CO ₂ , O ₂ , N ₂ with flow control
Temperature Control	Integrated heating/cooling (10°C–50°C)
pH Control	Automated acid/base dosing
Measurement & Control	Speed, Temp, CO ₂ , pH, light intensity, etc.
SCADA Integration	Full SCADA for remote monitoring, control & logging
Applications	Algae, Cyanobacteria, Macro/Micro Algae, Purple Bacteria, Plant Cells
Compliance & Safety	cGMP, FDA, ASME, BPE; CIP/SIP; Safety valves, alarms, emergency shutdown



BIOCALORIMETER

Bio calorimeter, fabricate and attempt to improve the sensitivity of calorimetric signals in the following ways:

- High sensitive RTDs (1mK) were installed in both reactor and jacket side and a robust temperature control strategy elicits response even there was a step change of 1mK in the reactor.
- Effect of ambient temperature fluctuations on the estimated calorimetric signals was reduced by insulating the jacketed surface by a vacuum and the heat loss through head plate was minimized by thermo stating it to the reactor operational temperature.



Feature / Specification	Details
Measurement Principle	Heat flow or power compensation method
Measurement Range	0.1 μ W to 100 W (adjustable per application)
Temperature Range	-20°C to 150°C; Accuracy: $\pm$ 0.01°C
Pressure Range	Up to 100 bar (customizable for higher pressure)
Volume Range	1 mL to 10 L
Sample Types	Liquid, solid, gas, or slurry
Stirring System	Magnetic or mechanical stirring (10–2000 RPM)
Sensitivity & Resolution	0.1 μ W sensitivity; 16 or 24-bit A/D conversion
Reaction Modes	Isothermal, Non-isothermal, Scanning
Software & Data Export	Real-time visualization; Export: CSV, Excel, PDF
Temperature Control	Peltier or liquid-based; Heating: electric/oil bath
Safety & Compliance	Over-pressure valves, alarms; cGMP, ISO 9001
Automation Features	Auto reagent addition, sampling, cleaning
User Interface & Connectivity	Touchscreen or PC-based; SCADA compatible
Optional Features	LED light integration, gas flow control, additional accessories



ALGAE OPEN CULTIVATION SYSTEM

We have experience with larger scale algae photo bio reactor with complete set up

Ø Race way pond with paddle wheel: 1KL to 100KL

Ø Flat panel reactor with Transparent Poly carbonate or LDPE sheet; 1KL to 100KL,

Ø Efficient recirculation system, Panel tilting arrangement suitable for the sunlight, algae harvest mechanism,

Ø Lipid extraction and solvent recovery



LABORATORY / PILOT / PRODUCTION SCALE FERMENTER



Unique & high durable system for research and Production Suitable for both microbial and cell culture application Operational flexibility for Batch, Fed batch, continuous /Perfusion culture Compliance all cGMP , ASME & BPE Std



Feature	Laboratory Scale	Pilot Scale	Production Scale
Volume Range	1L – 50L	50L – 500L	500L – 20,000L+
Material of Construction	SS316L (Product contact), SS304L (Non-contact)	SS316L (Product contact), SS304L (Non-contact)	SS316L (Product contact), SS304L (Non-contact)
Surface Finish	Mirror polish inside ($\leq 0.4\mu$), matte outside ($\leq 0.2\mu$)	Same as Lab Scale	Same as Lab Scale
Agitation System	Top-driven; Rushton, Marine, BT6, etc.	Top-driven; Multiple stirrer types	Top-driven; Multiple stirrer types
Heating & Cooling	Electrical or steam heating; glycerin/steam cooling	Electric/steam heating; glycerin or steam cooling	Steam heating; steam condensate/glycerin cooling
Sealing Mechanism	Single/double mechanical seals	Single/double mechanical seals	Single/double mechanical seals
Gas Mixing Station	Air + O ₂ or 4-Gas (Air, O ₂ , CO ₂ , N ₂)	Same as Lab Scale	Same as Lab Scale
Sparger System	Ring or micro sparger	Ring, micro, or sinter sparger	High-efficiency, pore-customizable sparger
Sterile Sampling System	Manual or Auto SIP Sampling	Manual or Auto SIP Sampling	Manual or Auto SIP Sampling
Automation Level	Semi or Fully Automated	Semi or Fully Automated	Fully Automated with SCADA Integration
SCADA & HMI	HMI / PC + SCADA Interface	HMI / PC + SCADA Interface	HMI / PC + SCADA Interface
Sterilization Method	ESIP / FSIP	ESIP / FSIP	ESIP / FSIP
Compliance Standards	ASME BPE, FDA 21 CFR Part 11, EU GMP	Same as Lab Scale	Same as Lab Scale
Customization	Basic customization options	Advanced recipe customization	Complete process customization
QC Documentation	IQ, OQ, DQ; GMP-validated systems	IQ, OQ, DQ; GMP-validated systems	IQ, OQ, DQ; GMP-validated systems

HIGH PRESSURE REACTOR

Biojenik Engineering's high-pressure reactors are engineered for cutting-edge applications in chemical synthesis, petrochemical refining, pharmaceutical research, and biotechnology processes. With customizable designs and advanced features, these reactors guarantee superior performance, safety, and durability across all scales.



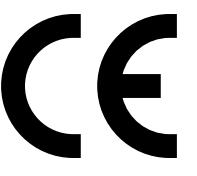
Specifications	Details
Material	SS316/SS316L, Hastelloy (C-22/C-276), Inconel, Titanium
Capacity	100 ml – 100 L (Lab, Pilot, Industrial scales)
Temperature Range	-50°C to 500°C
Pressure Range	Up to 300 bar
Automation	Fully or semi-automated with PLC/SCADA integration
Mixing	Magnetic/mechanical stirring, customizable impellers and baffles
Control Systems	Digital PID controllers ($\pm 0.1^{\circ}\text{C}$ accuracy)
Safety	Pressure relief valves, rupture disks, safety interlocks
Sealing	Magnetic drive seals for zero leakage
Additional Features	Gas spargers, internal/external heating & cooling, high-precision sensors, sampling valves

PROCESS VESSEL

At Biojenik Engineering, our process vessels are designed to meet the highest standards of quality and functionality, catering to the critical needs of pharmaceutical, chemical, and bio-food industries.

These vessels combine sanitary engineering with advanced electrical integration, ensuring seamless operation and precise control.

The Direct Digital Control (DDC) system incorporated into our designs delivers robust industrial performance while ensuring compliance with stringent pharmaceutical and industrial standards.

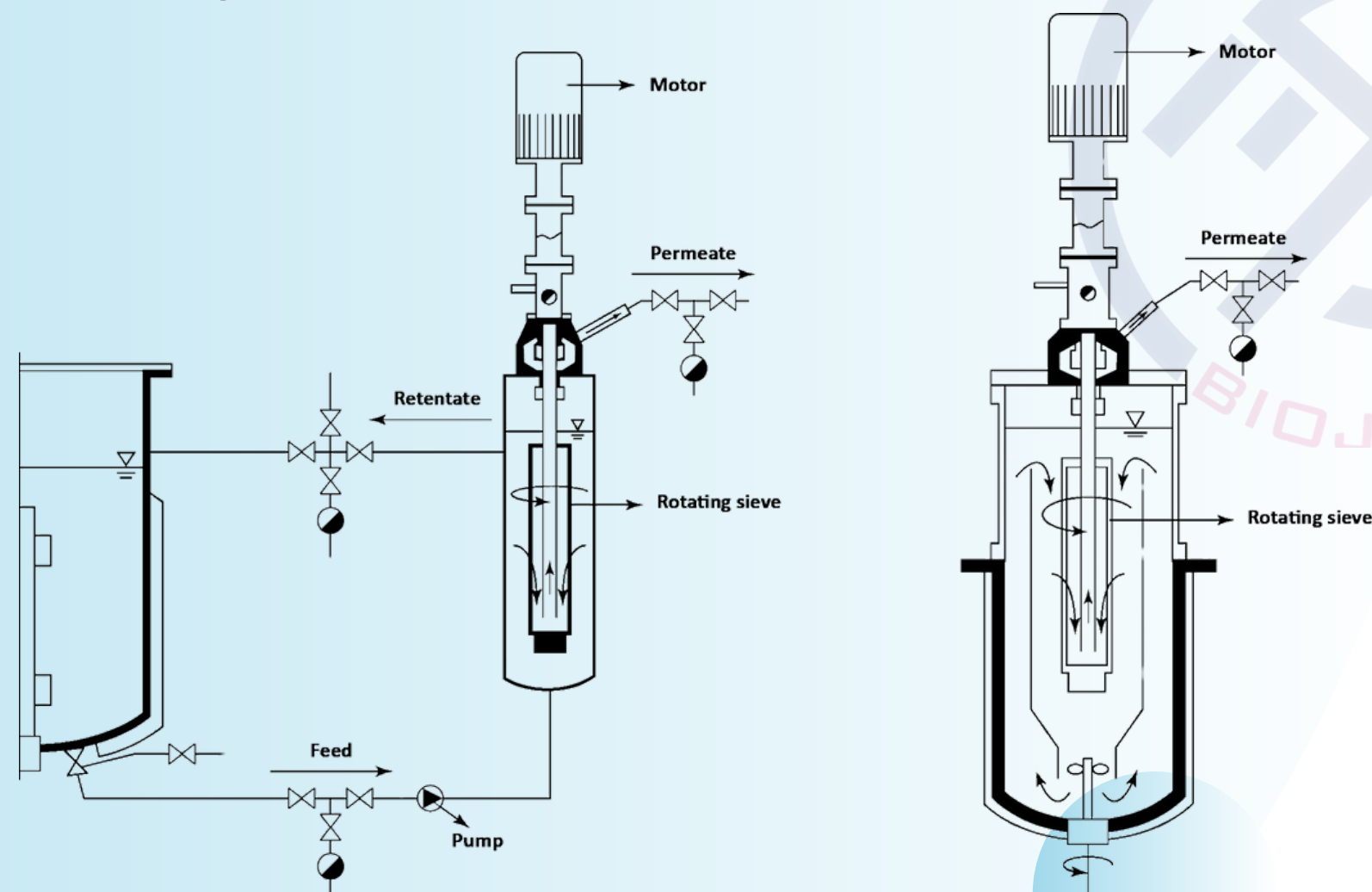




Specification	Details
Material	Stainless Steel (AISI 304, 316, 904); High-Alloy Materials (optional)
Capacity	1L to 40,000L (Custom sizes available)
Vessel Design	Single-wall, Double-wall, or Triple-wall Construction
Surface Finish	Internal Surface Finish: $\leq 0.2 \mu\text{m}$, $0.4 \mu\text{m}$, $0.6 \mu\text{m}$, or $0.8 \mu\text{m}$
Heating/Cooling Range	-20°C to 200°C
Pressure Rating	Atmospheric to High Pressure (customizable)
Sealing Options	Mechanical Seals, Magnetic Seals
Agitation Options	Mechanical Mixers, Homogenizers, Magnetic Stirring Systems
Insulation	High-performance insulation with custom cladding options
Compliance Standards	cGMP, ASME BPE, FDA, and EU Guidelines
Automation & Control	Fully / Semi-Automated with DDC-based control systems
SIP/CIP Integration	Integrated Sterilization/Cleaning systems
Sensors & Gauges	RTDs, Thermocouples, PT100; Digital/Analog Pressure Gauges
Instrumentation & Access Ports	Multiple ports for sensors, sampling, and process control
Extra Features	Mobile vessels (with wheels), ATEX/Explosion-proof design, LED sight glass

ROTOR FILTRATION SYSTEM

The rotor filter is a cutting-edge solution designed to prevent membrane fouling in filtration systems. Using Taylor vortices for turbulence and centrifugal forces, it efficiently filters solids without settling. Widely used in animal cell cultivation, this filter supports various production processes with different design variations.



Key Point	Description
Cell Retention	Retains up to 90% of cells (5–10 µm).
Rotating Sieve	Prevents clogging and fouling.
Low Shear	Gentle on sensitive cells.
Mesh Range	2–60 µm mesh sizes.
Stable Flow	40–150 L·m ² ·h ⁻¹ permeate flow.
High Cell Density	Supports up to 10 ⁷ cells/mL.
Efficient Exchange	1–2 volume exchanges/day.
Energy Efficient	Operates at 1000 rpm.
Sieve Area	0.3 to 2 m ² ·m ⁻³ efficiency.
Compact Design	Fits lab to production scale.
CIP/SIP Ready	Easy cleaning and sterilization.
Continuous Operation	Suitable for perfusion processes.
Easy Integration	Compatible with most bioreactors.
Durable Build	Stainless steel cylinder design.
Versatile Use	For clarification and cell separation.



TANGENTIAL FLOW FILTRATION SKID

A Tangential Flow Filtration (TFF) skid is a specialized system used in bioprocessing for efficient separation and purification of biomolecules. TFF operates by passing the feed solution tangentially across the surface of a membrane, allowing selective filtration. This method is particularly effective in concentrating and diafiltering proteins, cells, and other large biomolecules. A TFF skid typically includes pumps, sensors, and control systems to ensure precise operation, scalability, and integration into larger manufacturing processes. It's widely used in the production of biologics, vaccines, and other biopharmaceutical products



Key Feature	Details
Membrane Versatility	Supports Microfiltration, Ultrafiltration, and Hollow Fiber configurations
Wide Flow Rate Range	Operational from 0.5 to 1000 L/min, adaptable for various applications
High Pressure Support	Max inlet pressure up to 6 bar, TMP up to 4 bar
Automated Control System	PLC with HMI interface and manual override options
SCADA Integration	Real-time data logging, batch reporting, and remote access
Sterilization Capability	CIP/SIP compatible, withstands up to 121°C
Durable & Sanitary Build	SS316L frame and piping with tri-clamp fittings
Safety Features	Integrated alarms for pressure, flow rate, and membrane integrity
Customizable Skid Sizes	Small (250 kg), Medium (500 kg), Large (750 kg)
Regulatory Compliance	Meets GMP, CE-marked, and FDA 21 CFR Part 11 standards



CIP SYSTEM & SIP SYSTEM

Biojenik Engineering designs and manufactures Clean-in-Place (CIP) and Sterilize-in-Place (SIP) systems for cleaning and sterilization of process equipment. Our CIP/SIP systems automate essential cleaning and sterilization processes, eliminating the need for time-consuming disassembly and reassembly. They ensure consistent, validated, and efficient cleaning of equipment, reducing downtime and contamination risks.

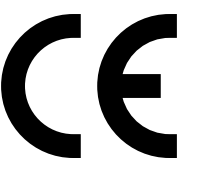
Specifications	Details
Material	Stainless steel (SS316L/SS304), with customizable options.
Capacity	1 liter to 50,000 liters.
Cleaning Routes	Single or multi-stream options.
Automation	Semi-automated or fully automated.
Cleaning Media	Supports water, detergents, demineralized water, and sanitizers.
Temperature Control	Up to 95°C for heat sanitation.
Pressure Control	Adjustable from 0.2 to 6 bar.
Flow Rate	Configurable between 50–500 L/hour.
Integration	Inline with production or stand-alone skid-mounted.
Validation	Supports full validation for flow, concentration, and cycle time.

GAS ANALYSER

The Gas Analyzer is engineered for accurate and continuous monitoring of gases emitted from industrial processes. Featuring a compact and modular design, it integrates advanced technologies to deliver precise measurements. This analyzer is equipped with a broad range of monitoring capabilities, making it suitable for detecting and analyzing various gases in real-time, ensuring compliance with environmental standards and optimizing process efficiency.



Specifications	O ₂ Analyzer	CO ₂ Analyzer
Detection Range	0.1 – 25% 0.1 – 100%	0 – 3% 0 – 10%
Measurement Accuracy	±0.5% of full range	±3% of range
Zero Point Stability	±0.5% of range (12 months)	±3% of range (12 months)
Resolution / Precision	±0.01% across range	—
Repeatability at Zero	—	±0.5% of range
Repeatability at Span	±1.5%	±1.5%
Response Time (T90)	≤ 4 seconds	30 seconds
Operating Temperature	0 – 200°C	0 – 100°C
Pressure Calibration	Calibrated to 1013 mbar	Calibrated to 1013 mbar
Power Input	15V DC (Optional 24V DC for linear version)	15V DC (Optional 24V DC for linear version)
Power Consumption	0.6W	0.6W
Warm-Up Duration	2 minutes	5 minutes
Humidity Endurance	0 – 95% RH, non-condensing	0 – 95% RH, non-condensing
Signal Output	4–20 mA (linear version)	4–20 mA (linear version)



BIO HYDROGEN (H₂), METHANE (CH₄), BIOWASTE, AGRI-WASTE PRODUCTION SYSTEMS

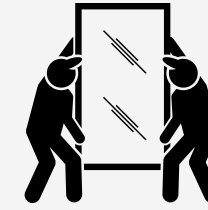
We are in line of the design & manufacturer of Bio Hydrogen (H₂) / Methane (CH₄) and Bio Ethanol slot with Lab scale upto production scale from natural bio mass.



Company Service



Our services span technical support, troubleshooting, rapid replacement part delivery, and customer-specific maintenance programs. From system startup to upstream and downstream equipment design and manufacturing, we offer customized engineering solutions and product development



**System
Installation &
Startup
Assistance**



**SCADA
Software
Training**



**Process
Consultancy**



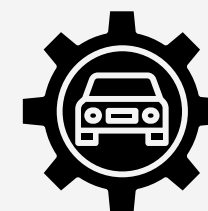
**Customized
Engineering
Solutions**



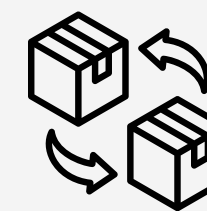
**Technical
Support &
Troubleshooting**



**Warranty
Services
AMC &
CMC
Services**



**Relocation &
Retrofitting
Services**



**Rapid
Replacement
Parts Delivery**



**24x7
Customer
Support**

Why Choose Us ?

At Biojenik Engineering, we pride ourselves on being your trusted partner for cutting-edge biotech instrument solutions. With our unwavering commitment to excellence and extensive industry expertise, we offer unparalleled advantages that set us apart. Our team of skilled professionals is dedicated to delivering precision engineering and innovative solutions tailored to your unique research needs



Customized Solutions

Industry Expertise

Precision Engineering

Quality Assurance

Cutting-edge Technology

Customer-centric Approach

Research Optimization

Innovation and Breakthroughs





Connect with us.



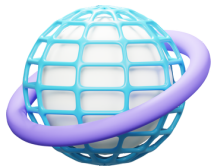
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