



An ISO 9001:2015 Certified Company

**"Transforming Bold Ideas into Real-World Solutions through Comprehensive Research, Innovative Development, and Superior Manufacturing Expertise"**





**Join us for the best solutions with smart innovation**

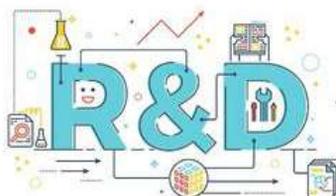
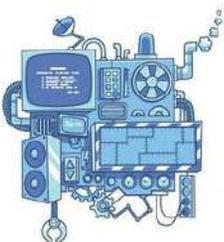
# COMPANY PROFILE

## ABOUT US

Balief Corporation leads in specialized manufacturing and sustainable solutions, focusing on cutting-edge technologies like CO2 capture, green hydrogen production, and waste energy conversion through the Organic Rankine Cycle (ORC). As an ISO 9001:2015 certified company, we pride ourselves on a team of highly skilled technical experts and a distinguished mentor board, driving innovation and delivering cost-effective, high-quality solutions. Our commitment to excellence and sustainability is reflected in our 3 Granted Product Patent & 10 Granted Design Registration and the deployment of our advanced equipment in renowned R&D divisions, including IOCL and HPCL. At Balief, we continually push the boundaries of our industry, pioneering advancements that contribute to a greener and more sustainable future.

## OUR SERVICES

- **Sustainable Technology Solutions:** Expertise in CO2 capture, waste energy conversion (ORC), air and water treatment, green hydrogen production, and more sustainable innovations.
- **R&D Services:** Comprehensive R&D support for industry leaders, research divisions, and academic institutes, offering tailored solutions to meet diverse research needs.
- **Experimental Setup Design:** End-to-end solutions for experimental setups, including concept development, implementation, prototyping, and MVPs.
- **Lab Equipment:** Innovative design and fabrication of lab equipment, enhancing conventional models to support advanced research requirements
- **Product Development:** Delivering cutting-edge solutions through innovative product development, including thorough prototyping and rigorous testing.



## SUSTAINABLE SOLUTIONS

- Pilot-Scale CO<sub>2</sub> Capture Plant
- High-Performance RPB Carbon Removal System
- Compact CO<sub>2</sub> Capture System
- Hybrid Solar-geothermal ORC System
- HDH MD Water Desalination system
- Biomass Combustor Food Dryer
- Organic Rankine Cycle (ORC)

## INDUSTRIAL PRODUCTS

- Heat Pump For Water & Air Heating
- Heat Pump Assisted Food Dryer
- Water And Air Chiller
- Effluent Treatment Plant (ETP)
- Air Scrubber
- Dust Collector

## ACADEMIC R&D Projects

### MECHANICAL ENGINEERING LAB

- Nano Particle Based VCR System
- Humidification-Dehumidification (HDH) Water Desalination Test Rig
- VCR based Milk Pasteurization System
- **Refrigeration System with Interchangeable Modules**
- **Variable VCR Test Rig**
- **Combine Solid-Liquid Desiccant Test Rig**
- Air-conditioning Test Rig
- Vapor Absorption Refrigeration (VAR) System
- Stephen Boltzmann Apparatus
- **Advanced Multi - Heat Exchanger Test Rig**
- Emissivity Apparatus
- Water Cavitation Test Rig
- **Flat Sheet Reverse Osmosis (RO) System**
- **NF-RO Membrane System**
- HDH Based Water Desalination Test Rig
- **Advanced Adsorption For Effluent Treatment**
- Bomb Calorimeter
- Separating & Throttling Calorimeter

### GEOTHERMAL ENERGY LAB

- Hybrid Solar-geothermal ORC System
- Geothermal Energy Assisted Air Food Dryer
- Geothermal Energy Assisted Water Desalination system
- Geothermal Based Milk Pasteurization

### NON-CONVENTIONAL ENERGY LAB

### CIVIL ENGINEERING LAB

- Planetary Ball Mill
- **Hydrological Investigations (River Flow & Rain Fall) Test Rig**

### FLUID MECHANICS LAB

- **Multi-Pump Test Rig**
- Multipurpose Flow Demonstrator
- Flow Characteristics Apparatus (Bernoulli's, Venturi, Orifice and Rotameter) (Customizable)
- Bernoulli's Theorem Apparatus
- Reynold's Apparatus
- Laminar Flow table Apparatus
- Francis Turbine Test Rig
- Propeller Type Water Current Meter
- Centrifugal Pump Test Rig
- Reciprocating Pump Test Rig
- Major And Minor Losses In Pipes

### CHEMICAL / CHEMISTRY LAB

- Vapour Liquid Equilibrium (VLE)
- VLE Setup (Kinetic Reaction)
- Catalytic Reactor / Autoclave
- High Temperature Reactor (Kinetic)

### PETROLEUM ENGINEERING LAB

- **Tri-Axial Core Fracturing Test Unit**
- Proppant Transport Test Rig
- Proppant Pack Permeability Testing System

Many more.....

# Sustainable Solutions

**"Empowering a Sustainable Future:  
Innovative Solutions for a Greener,  
Cleaner, and Healthier Planet!"**



## Contact Us:

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
 [www.baliefcorporation.com](http://www.baliefcorporation.com)  
 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Capture CO<sub>2</sub> for a future that benefits the next generation



## About System

Advanced CO<sub>2</sub> capture pilot plant features separate absorber and desorber columns for seamless batch and continuous operations. It includes dedicated storage for lean and rich solvents, sophisticated processing units, a high-efficiency cooling tower, and a pre-heating tank with an integrated heat exchanger. Automated control of input parameters and real-time data monitoring ensure precise operation. The plant is expandable from pilot scale to industrial scale.

## Application

- Pilot Studies for CO<sub>2</sub> Absorption and Desorption
- Research and Development Initiatives
- Educational Research & Studies
- Effectiveness Testing of Chemical Processes or Solvents
- Testing & Evaluation of Different types of Packing
- Powerplants, manufacturing & chemical industries etc.

## Key Feature

- HMI-PLC based fully automatic control system reduces human interaction and increases safety
- Advanced static Absorber - Desorber Column System
- Diverse Packing & Solvent Selection
- Capacity: Up to 10 TPD
- Comprehensive Instrumentation
- Efficient Heat Exchange Mechanisms



# High-Performance RPB Carbon Removal System

Revolutionizing Mass  
Transfer Efficiency

## Key Feature

- Rotating Packed Bed (RPB) Technology
- Packing Dia: 150 to 1000 mm
- Speed control: 200 to 1440 RPM
- Working Pressure: 0 to 4 barg
- Operation Customizable
- Precise Measurement and Control
- Safety Features: Interlocks, HP trip, PRV, Emergency shut-off
- HMI-PLC based Fully automatic Control system

## Application

- CO<sub>2</sub> Capture Pilot Studies
- Chemical Process or Solvent Effectiveness Testing
- Testing for different types of Packing
- Research and Development (R&D)
- Educational Institutions
- Laboratory Experiments



## About System

Experience the next level of carbon sequestration with the High-Performance RPB Carbon Removal System. Designed for superior efficiency, this advanced technology enhances chemical reactions for optimal CO<sub>2</sub> capture. Ideal for both laboratory and industrial applications, its customizable RPB rotor unit seamlessly integrates into existing systems, maximizing operational performance and sustainability. With expandable capabilities, this system adapts to your evolving needs, accelerating your path toward a cleaner, greener future.



## Contact Us:

✉ info@baliefcorporation.com  
🌐 www.baliefcorporation.com  
☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Efficient Emission Control for Small-Scale Laboratories

## Specification

- CO<sub>2</sub> Capture Process
- Applicable for Different Solvent Testing
- Column Dia. : 50-250mm
- Column Height: Up to 2m
- Tank: up to 80 Liter
- Evaluation of Different Packing Types
- Liquid Flow control
- Gas Flow Control
- Liquid distributor
- Gas Mixing chamber
- Immersion Heater
- Different flow meters
- PT-100 Temp Sensors
- Modular Plug & Play Design
- Customizable Settings
- Manual or Automatic control panel

## Application

- Academic and research institutes
- Solvent and Packing Testing

## About System

Our innovative solution not only efficiently captures carbon dioxide from exhaust emissions but also integrates seamlessly with diverse process components and a sophisticated control panel. This compact static column CO<sub>2</sub> absorber serves as a versatile regenerator, ideal for laboratory-scale applications, contributing to sustainable environmental practices and technological advancements in carbon capture and utilization.



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Efficient Energy Conversion



## Key Feature

- Capacity: 1 to 20 KW
- Variety of working fluids can be selected for optimized performance
- Suitable for waste heat, geothermal, and solar energy
- Efficient energy generation
- Comprehensive technical specifications
- Manual or HMI-PLC based fully automatic Control Panel

## Application

- Academic & Industrial Research
- Waste heat recovery Solutions
- Solar thermal systems
- Process heating applications
- Geothermal power plants
- Electricity generation with low-grade heat sources
- Power plants



## About System

Explore the cutting-edge of sustainable energy with our Organic Rankine Cycle (ORC) Pilot Scale Plant. This innovative system is designed to convert low-temperature heat sources into electricity, available in various power ranges to suit diverse applications. Ideal for both research and small-scale industrial uses, our ORC plant features advanced technology and robust construction to ensure high efficiency and reliability. Perfect for renewable energy projects, it contributes to reducing carbon emissions and promoting environmental sustainability. Invest in a greener future with our ORC pilot plant and harness the power of clean energy.

**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## About System

The Hybrid Solar-Geothermal ORC System efficiently converts low-temperature heat into electricity using an Organic Rankine Cycle (ORC). It combines solar and geothermal energy, maximizing efficiency with organic working fluids. With optimized heat recovery, automated control, and a modular design, it's scalable, adaptable, and eco-friendly cutting carbon emissions while providing sustainable, cost-effective power.

## Application

- Solar – Geothermal Power Generation
- Industrial Waste Heat Recovery
- Remote & Off-Grid Power Solutions
- Sustainable Energy Projects
- Microgrid & Distributed Power Systems
- Process heating applications

## Key Feature

- Capacity: up to 50kW (customizable)
- Hybrid Solar-Geothermal for high efficiency
- Low-temp operation for solar & geothermal
- Organic fluid for better performance
- Optimized heat recovery for efficiency
- Automated PLC-HMI control
- Scalable & modular design
- Eco-friendly with low carbon footprint



✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Innovative & Sustainable Water Purification



## About System

The HDH-MD Water Desalination System combines Humidification-Dehumidification and Membrane Distillation to efficiently extract fresh water from saline sources. With automated PLC-HMI control, energy-efficient heat recovery, and a brine crystallizer for zero liquid discharge, it offers a sustainable, cost-effective solution for industries, municipalities, and off-grid use

## Application

- Industrial water treatment and wastewater recycling
- Drinking water production for coastal and remote areas
- Municipal desalination for freshwater supply
- Oil & Gas operations requiring purified water
- Research and development in water purification



## Key Feature

- Dual-process desalination
- Zero Liquid Discharge (ZLD) with brine crystallizer
- High-quality water (TDS < 100 ppm)
- Energy-efficient with heat recovery
- Fully Automatic HMI-PLC based also operated through IoT
- Scalable & adaptable
- Advanced safety with interlocks

**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Biomass Combustor Food Dryer

Embrace the power of green preservation



## About System

The biomass combustor-assisted food dryer revolutionizes agricultural practices by efficiently harnessing biomass to generate hot air, essential for drying food across multiple trays. This innovative system not only optimizes biomass utilization but also enhances food preservation capabilities, offering farmers a sustainable and cost-effective solution. With its potential for significant return on investment (ROI), the dryer proves invaluable to agricultural communities seeking reliable methods to process and store food efficiently.

## Key Feature

- Tray: For 2 to 4 kg , MOC- SS/Al
- Fuel burning chamber
- 1 to 10 HP Air Blower
- Energy Efficient
- Versatile Features
- Cost-Effective & Environment Freidly

## Application

- Academic & Industrial Research
- Agricultural and Farming Operations
- Hospitality & Food Service Industry
- Off-Grid Locations



[info@baliefcorporation.com](mailto:info@baliefcorporation.com)

[www.baliefcorporation.com](http://www.baliefcorporation.com)

+91 84607 68860 | +91 79904 06122

7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

**Contact Us:**

# Hydrogen and Natural Gas Blending System

Powering the Future: Clean Hydrogen, Smarter Gas



## About System

The Hydrogen (H<sub>2</sub>) and Natural Gas Blending System is designed to integrate hydrogen into natural gas pipelines to create a blended fuel mixture. This innovative approach enhances the sustainability of natural gas infrastructure by reducing carbon emissions and increasing the utilization of clean energy sources. The system ensures a controlled and precise blending process, maintaining stability and safety across various applications.

Hydrogen blending with natural gas is a crucial step toward a low-carbon energy transition. By integrating hydrogen into existing gas networks, industries and utilities can reduce their reliance on fossil fuels while leveraging existing infrastructure.

## Key Feature

- Leakproof System
- Pneumatic On/Off valves with actuators
- Fully Automatic HMI-PLC control panel
- Powered with Safety Interlocks and Features

## Application

- Academic and Industrial Research
- Petroleum and Chemical industry
- Energy sector
- Industrial Scale-Up



## Contact Us:

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Hybrid Battery Thermal Management System

Powering the Future: Clean Hydrogen, Smarter Gas



Battery Cycler

## About System

A Hybrid Battery Thermal Management System (BTMS) is a highly advanced system designed to regulate the temperature of battery packs in hybrid and electric vehicles, ensuring that the batteries remain within their optimal operating temperature range. Battery performance, efficiency, and safety are highly sensitive to temperature variations, making thermal management critical. Excessive heat can degrade battery performance, reduce lifespan, and even pose safety risks like thermal runaway, while low temperatures can significantly reduce the battery's efficiency. A BTMS helps to mitigate these risks by actively managing the heat generated during battery operation, especially during high-power usage or charging.

## Key Feature

- Weather Chamber with Colling and Heating Arrangement with insulation
- Advance BMS and Cycler for Better Performance
- Battery Cooling system with jacketed Battery Holder
- PCM based battery Testing system
- USB Data logging Directly to Excel

## Application

- Academic and Industrial Research
- EV industries
- Energy sector
- Battery Testing



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Industrial Products

"Advanced Solutions for a Cleaner, Cooler,  
and More Efficient World"



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



Solutions for Sustainable  
Industrial Waste  
Management

## Key Feature

- Plug & Play type compact system
- No Site Installation Required
- High Efficiency in Pollutant Removal
- Product variant: Up to 100 KLD
- Fully customized as per customer requirements
- Prefabricated & Fully operational inhouse tested, so no site testing required for leakages and others
- Modular and Sturdy Structure

## About System

Effluent Treatment Plants (ETPs) use physical processes such as screening and sedimentation to remove solids, while chemical methods like coagulation and flocculation target dissolved contaminants. Biological treatments, such as activated sludge or biofilters, break down organic pollutants with the help of microorganisms. These processes collectively reduce organic matter, nutrients, heavy metals, and pathogens in wastewater. Disinfection, typically through chlorination or UV irradiation, ensures the treated water meets safety standards before discharge or reuse. ETPs play a vital role in safeguarding water quality and environmental health by treating industrial and municipal wastewater effectively before it enters the ecosystem or re-enters the water cycle.

## Application

- Wastewater Treatment in Textile, Pharmaceutical, Chemical and Petrochemical Industries.
- Food and Beverage Industry
- Automotive and Manufacturing Industries
- Power Plants



**Contact Us:**

[info@baliefcorporation.com](mailto:info@baliefcorporation.com)

[www.baliefcorporation.com](http://www.baliefcorporation.com)

+91 84607 68860 | +91 79904 06122

7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Safeguarding your Environment

## About System

An air scrubber is a device used to remove contaminants, pollutants, and particulates from the air. It operates by drawing air through a series of filters and purification mechanisms to clean it before releasing it back into the environment.

Key functions and benefits of an air scrubber:

- **Particulate Removal:** Air scrubbers effectively remove dust, pollen, mold spores, and other airborne particles.
- **Chemical Fume Removal:** They can filter out harmful gases and chemical fumes, making the air safer to breathe.
- **Odor Control:** Air scrubbers can eliminate unpleasant odors by trapping or neutralizing odor-causing particles.
- **Microbial Control:** They help reduce airborne bacteria, viruses, and other microorganisms, improving overall air hygiene.
- **Improved Indoor Air Quality:** By removing various contaminants, air scrubbers contribute to a cleaner and healthier indoor environment.

## Application

- Manufacturing industries
- Pharmaceutical and Chemical Industries
- Food and Beverage Industries
- Waste air Treatment
- Process Optimization
- Construction Sites



## Key Feature

- Types : Dry / Wet / Venturi / Combine
- Fully customizable as per need
- Air blower and water pump (customized)
- Air & water filtration Filtration
- Smooth and quite Operation
- Air flow meter , Water rotameter (optional)
- High Airflow Capacity ( as per need )
- Energy Efficient
- Durable Construction
- Low running cost
- Environmental Impact Reduction

**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Heat Pump For Water & Air Heating

Efficiency meets versatility in heating solutions



## About System

Discover the future of heating with our state-of-the-art Heat Pump utilizing VCR (Variable Capacity Ratio) technology. Engineered for optimal energy efficiency and adaptable thermal management, this advanced system ensures precise temperature control across diverse residential and commercial environments. With its innovative design and sustainable performance, our VCR-based Heat Pump redefines comfort and efficiency, setting a new benchmark in HVAC solutions for modern living and working spaces.

## Specification

- Heating Capacity: Up to 10 TR & Above
- Industrial & commercial Heating Solution
- Modern and Compact Design
- Temperature Controller
- Air Blower/Water Pump capacity : As per Requirement
- Inbuilt and Separate Storage Tank Options
- In-built Water Pump
- High-Efficiency PHE
- Modular Setup
- User-Friendly
- Plug & Play System



## Contact Us:

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Efficiently preserve freshness with Heat Pump Food Dryer

## About System

Introducing our cutting-edge Heat Pump Assisted Food Dryer, which revolutionizes food preservation with advanced heat pump technology for precise temperature control and gentle drying. This innovative system not only reduces energy consumption but also preserves nutritional integrity by maintaining natural flavors and textures. By harnessing the efficiency of heat pumps, it significantly minimizes environmental impact through reduced greenhouse gas emissions.

From small-scale artisanal operations to large-scale commercial production, our dryer offers versatile and cost-effective drying solutions across a variety of foods. Its ability to ensure consistent quality and extended shelf life makes it an ideal choice for businesses aiming to enhance product quality and sustainability in food processing. Experience superior efficiency, enhanced food quality, and sustainable growth with our Heat Pump Assisted Food Dryer—a game-changer in the field of food preservation technology.



## Specification

- Capacity: up to 10 TR and Above
- Industrial and commercial food drying
- Customized based on application
- New and Compact design
- Air Temperature control
- Tray Capacity: as per requirements
- Customized Tray Distribution and Size
- Plug & Play to Use



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Enhance industrial efficiency with our advanced chillers



## About System

Discover the pinnacle of industrial cooling precision with our Air & Water chiller systems. Crafted to exacting standards, these advanced units blend state-of-the-art thermodynamics with rugged durability. Engineered for efficiency, they balance optimal energy use with steadfast cooling power, guaranteeing reliable performance across dynamic manufacturing environments. Whether it's ensuring equipment longevity or meeting stringent production demands, our chiller solutions stand as indispensable assets, driving seamless operations and setting new benchmarks in industrial cooling excellence.

## Specification

- Capacity: up to 50 TR and Above
- Customization (optional)
- Air & Water chillers
- Safety interlocks
- Alarm for errors & problems
- Temperature controller
- In-built water pump
- Highly efficient PHE
- Modular setup
- User friendly
- Plug & Play system
- Variable Chiller (Optional)



[info@baliefcorporation.com](mailto:info@baliefcorporation.com)

[www.baliefcorporation.com](http://www.baliefcorporation.com)

+91 84607 68860 | +91 79904 06122

7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Academic R&D Projects

**"Driving Breakthroughs in Education and Research: Bridging Ideas and Impact Through Innovative Academic R&D Projects."**



## Contact Us:

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
 [www.baliefcorporation.com](http://www.baliefcorporation.com)  
 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Milestone R&D

**"Advancing Education Through Innovative  
Research and Development"**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Variable VCR Test Rig

Optimize cooling with our Variable VCR System's versatile parts



## Learning Outcome

- Understanding the principle of vapour compression refrigeration system.
- Familiarity with controlling of flow rate and different expansion devices such as electronic expansion valves, capillary tubes, and thermostatic expansion valves.
- Ability to learn the system performance characteristics.
- Evaluation of results and calculate the C.O.P. of the system.
- Comparative study with different expansion devices and live water cooled condenser and live load evaporator.

## Specification

- HMI-PLC based fully automatic system with data logging
- Ethernet and Wi-Fi enabled for remote operation
- IoT based system (optional)
- Variable speed compressor
- Two type of Condenser : Air-cooled and Water-cooled condenser
- Two type of Evaporator : PHE and Submerged coil type evaporator
- Three types of expansion valves : Thermostatic Expansion valve (TXV), Capillary, Electronic Expansion valve (EXV)
- Flow selection : Live circulation & Tank Circulation



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Combine Solid-Liquid Desiccant Test Rig

Save energy with hybrid desiccant system



## Learning Outcome

- Gain comprehensive knowledge of the operation of AHUs and domestic air conditioning systems.
- Understand the impact of variable speed compressors on system performance.
- Analyze the role of humidifiers, Solid and Liquid desiccant systems in creating desired ambient conditions.
- Explore the flexibility of operating different AHU features alongside a variable VCR system.
- Study and evaluate 19 combinations of psychrometric processes.
- Develop skills in configuring and operating systems at various compressor speeds.
- Master seamless data acquisition and control through HMI.

## Specification

- HMI-PLC based fully automatic with data recording
- Ethernet and Wi-Fi enabled for remote operation
- IoT based system (optional)
- Variable speed compressor
- Integrated humidifier (optional)
- Two Types of combine desiccant systems: Solid & Liquid
- Four different AHU features
- Combinations: 19 possible configurations for operation
- Safety feature : HP-LP , Interlocks, Pressure cutoff, Emergency switch etc.



**Contact Us:**

✉ info@baliefcorporation.com  
 🌐 www.baliefcorporation.com  
 📞 +91 84607 68860 | +91 79904 06122

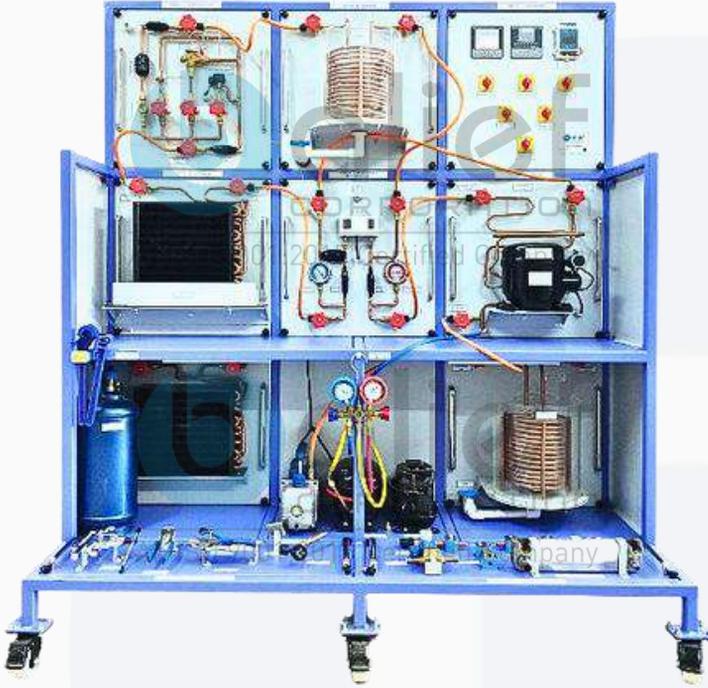
📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Refrigeration System With Interchangeable Modules

Transform training with our modular refrigeration system

## Specification

- Hands-On Learning system
- Air-cooled and Water-cooled condenser
- Fin & tube type and Submerged coil type evaporator
- Three types of Expansion Devices : Capillary, TXV and EXV
- Detachable and replaceable Components
- Facilitating quick module changes
- Data logging Facility
- Dashboard for the Tools & Components and their section views



## Learning Outcome

- Understanding the principles of refrigeration, including heat transfer, the refrigeration cycle, and the role of different components in the system.
- Familiarity with different types of condensers and evaporators, their characteristics, and applications.
- Knowledge of expansion devices, such as expansion valves, capillary tubes, and thermostatic expansion valves.
- Skills in changing condensers and evaporators, including removing and attaching modules and tightening connections.
- Proficiency in conducting leakage tests using air filling and checking for leaks using bubbling liquid.
- Competence in evacuating air and moisture from the system using a vacuum pump.
- Ability to charge gas into the system from a gas cylinder.
- Understanding the importance of data collection and documentation for analysis and troubleshooting.

## Application

- Education , Learning and hands on training in Academic institutes



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Capture CO<sub>2</sub> for a future that benefits the next generation



## About System

Advanced CO<sub>2</sub> capture pilot plant features separate absorber and desorber columns for seamless batch and continuous operations. It includes dedicated storage for lean and rich solvents, sophisticated processing units, a high-efficiency cooling tower, and a pre-heating tank with an integrated heat exchanger. Automated control of input parameters and real-time data monitoring ensure precise operation. The plant is expandable from pilot scale to industrial scale.

## Application

- Pilot Studies for CO<sub>2</sub> Absorption and Desorption
- Research and Development Initiatives
- Educational Research & Studies
- Effectiveness Testing of Chemical Processes or Solvents
- Testing & Evaluation of Different types of Packing
- Powerplants, manufacturing & chemical industries etc.

## Key Feature

- HMI-PLC based fully automatic control system reduces human interaction and increases safety
- Advanced static Absorber - Desorber Column System
- Diverse Packing & Solvent Selection
- Capacity: Up to 10 TPD
- Comprehensive Instrumentation
- Efficient Heat Exchange Mechanisms



# Hydrogen and Natural Gas Blending System

Powering the Future: Clean Hydrogen, Smarter Gas



## About System

The Hydrogen (H<sub>2</sub>) and Natural Gas Blending System is designed to integrate hydrogen into natural gas pipelines to create a blended fuel mixture. This innovative approach enhances the sustainability of natural gas infrastructure by reducing carbon emissions and increasing the utilization of clean energy sources. The system ensures a controlled and precise blending process, maintaining stability and safety across various applications.

Hydrogen blending with natural gas is a crucial step toward a low-carbon energy transition. By integrating hydrogen into existing gas networks, industries and utilities can reduce their reliance on fossil fuels while leveraging existing infrastructure.

## Key Feature

- Leakproof System
- Pneumatic On/Off valves with actuators
- Fully Automatic HMI-PLC control panel
- Powered with Safety Interlocks and Features

## Application

- Academic and Industrial Research
- Petroleum and Chemical industry
- Energy sector
- Industrial Scale-Up



## Contact Us:

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Tri-Axial Core Fracturing Test Unit

Precision meets reliability in every fracture

## Specification

- Triaxial Pressure/force (Confining, Axial and Lateral )
- Core Holder MOC : SS 316L
- Customizable to fit core samples of various sizes Up to 6 Inches
- Air Driven Gas Booster Pump working Up to 15,000 psi
- Working Pressure Range: Up to 10,000 psi
- Water bath temperature Range: Up to 80 °C
- Hydraulic pumps working pressure Up to 10,000 psi (Servo operated Optional)
- Modular Design
- Consist of Vacuum Pump, Air Compressor
- Safety : Pressure Safety Valve, Overflow Point, Auto Pressure cutoff system & Air compressor



## Learning Outcome

- Understand the core testing process.
- Comprehend the principles of core fracturing using a triaxial system.
- Analyze the effects of supercritical CO<sub>2</sub> (SC-CO<sub>2</sub>) on rock fracture behavior.
- Learn to control and adjust pressure in a triaxial core system.
- Assess the impact of temperature variations on core fracturing.
- Utilize acoustic emission sensors to detect and analyze fracture events.
- Understand the significance of pressure variations in fracturing.
- Collect and analyze experimental data.

## Application

- Academic and industrial research for geological studies and core testing.
- Applied in petroleum engineering for reservoir characterization and hydraulic fracturing.
- Geothermal energy, seismology & environment engineering research
- Integral to rock mechanics for fracture analysis and strength testing.



## Contact Us:

✉ info@baliefcorporation.com  
🌐 www.baliefcorporation.com  
☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Multi-Pump Test Rig

Achieve precision and efficiency in pump testing



## Specification

- HMI-PLC based fully automatic system with USB data logging & Live monitoring
- Storage Tank capacity : Up to 500 Liter
- Centrifugal Pump: 0.5 - 2 HP (Up to 150 LPM)
- Gear Pump: 0.5 - 2 HP (up to 50 LPM)
- Reciprocating Pump: 0.5 - 2 HP (up to 30 LPM)
- Digital Electromagnetic Water Flow sensor and Torque Sensor compatible with PLC
- Motorized Globe Valve for flow control
- Motorized Ball Valve for process selection
- Easy Interchangeable provision of the impeller in Centrifugal pump
- Acrylic casing used for centrifugal pumps to visualize cavitation effects with various impeller types
- Energy consumptions of pumps and total system

## Learning Outcome

- Understand the principles and operation of multiple pump systems.
- Learn to set up and calibrate a multi-pump test rig.
- Analyze the performance characteristics of different pump types under varying conditions ( like flow, pressure etc. )
- Gain skills in measuring and interpreting flow rates, pressures, and efficiencies.
- Develop the ability to troubleshoot and diagnose issues within pump systems.
- Assess the energy consumption and efficiency of pump configurations.
- Explore the impact of different fluid properties and different impeller on pump performance.
- Enhance practical knowledge of maintenance and safety procedures for pump systems.



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Advanced Multi - Heat Exchanger Test Rig

Transforming energy efficiency through heat exchange solutions



## Specification

- Manual Control Panel (Automatic panel is optional)
- Water storage tank : up to 100 Liters, Tank MOC: SS304 with insulation
- Water Heater: up to 3 kW
- Centrifugal Pumps: 0.5 or 1 HP
- Pumps flow controlled by VFD
- Digital water flow sensor
- Three types of Heat exchanger (Tube-in-Tube Heat Exchanger, Plate Heat Exchanger, Shell & Tube Heat Exchanger ( all Heat exchanger MOC is SS304/316)
- Provision of other heat exchanger testing.
- Data logger with USB port for data collection
- Multiple process flow direction options for flexibility in testing configurations.

## Learning Outcome

- Understand the principles and operation of heat exchangers with multiple configurations.
- Gain practical skills in setting up and calibrating a multi-heat exchanger test rig.
- Analyze thermal performance across different heat exchanger designs and materials.
- Explore the impact of flow rates, temperatures, and fluid properties on heat exchanger performance.
- Acquire knowledge of maintenance and safety protocols specific to heat exchanger systems.
- Apply experimental data to validate theoretical heat transfer models and design criteria.
- Comparison of the different types of the heat exchanger performance.

## Application

- Testing and optimizing heat exchanger designs and configurations for industries
- Education and Training
- Testing and Validation
- Quality control
- Research and development for Energy and other sectors
- Product Development



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Mechanical Engineering Lab

**"Where Precision Meets Innovation: Shaping the Future of Mechanical Engineering through Advanced Research and Hands-On Learning."**



## Contact Us:

[info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
[www.baliefcorporation.com](http://www.baliefcorporation.com)  
+91 84607 68860 | +91 79904 06122

7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Refrigeration & Air conditioning (RAC) Lab

**"Chill Out with Precision: Your Go-To for Refrigeration and Air Conditioning Projects"**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Variable VCR Test Rig

Optimize cooling with our Variable VCR System's versatile parts



## Learning Outcome

- Understanding the principle of vapour compression refrigeration system.
- Familiarity with controlling of flow rate and different expansion devices such as electronic expansion valves, capillary tubes, and thermostatic expansion valves.
- Ability to learn the system performance characteristics.
- Evaluation of results and calculate the C.O.P. of the system.
- Comparative study with different expansion devices and live water cooled condenser and live load evaporator.

## Specification

- HMI-PLC based fully automatic system with data logging
- Ethernet and Wi-Fi enabled for remote operation
- IoT based system (optional)
- Variable speed compressor
- Two type of Condenser : Air-cooled and Water-cooled condenser
- Two type of Evaporator : PHE and Submerged coil type evaporator
- Three types of expansion valves : Thermostatic Expansion valve (TXV), Capillary, Electronic Expansion valve (EXV)
- Flow selection : Live circulation & Tank Circulation



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Combine Solid-Liquid Desiccant Test Rig

Save energy with hybrid desiccant system



## Learning Outcome

- Gain comprehensive knowledge of the operation of AHUs and domestic air conditioning systems.
- Understand the impact of variable speed compressors on system performance.
- Analyze the role of humidifiers, Solid and Liquid desiccant systems in creating desired ambient conditions.
- Explore the flexibility of operating different AHU features alongside a variable VCR system.
- Study and evaluate 19 combinations of psychrometric processes.
- Develop skills in configuring and operating systems at various compressor speeds.
- Master seamless data acquisition and control through HMI.

## Specification

- HMI-PLC based fully automatic with data recording
- Ethernet and Wi-Fi enabled for remote operation
- IoT based system (optional)
- Variable speed compressor
- Integrated humidifier (optional)
- Two Types of combine desiccant systems: Solid & Liquid
- Four different AHU features
- Combinations: 19 possible configurations for operation
- Safety feature : HP-LP , Interlocks, Pressure cutoff, Emergency switch etc.



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
 [www.baliefcorporation.com](http://www.baliefcorporation.com)  
 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Refrigeration System With Interchangeable Modules

Transform training with our modular refrigeration system



## Specification

- Hands-On Learning system
- Air-cooled and Water-cooled condenser
- Fin & tube type and Submerged coil type evaporator
- Three types of Expansion Devices : Capillary, TXV and EXV
- Detachable and replaceable Components
- Facilitating quick module changes
- Data logging Facility
- Dashboard for the Tools & Components and their section views

## Learning Outcome

- Understanding the principles of refrigeration, including heat transfer, the refrigeration cycle, and the role of different components in the system.
- Familiarity with different types of condensers and evaporators, their characteristics, and applications.
- Knowledge of expansion devices, such as expansion valves, capillary tubes, and thermostatic expansion valves.
- Skills in changing condensers and evaporators, including removing and attaching modules and tightening connections.
- Proficiency in conducting leakage tests using air filling and checking for leaks using bubbling liquid.
- Competence in evacuating air and moisture from the system using a vacuum pump.
- Ability to charge gas into the system from a gas cylinder.
- Understanding the importance of data collection and documentation for analysis and troubleshooting.

## Application

- Education , Learning and hands on training in Academic institutes



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Precision redefined with nanoparticle-based VCR systems



## Learning Outcome

- Understanding the Principle of Vapour Compression Refrigeration System
- Learn about the refrigeration cycle, including the processes of compression, condensation, expansion, and evaporation.
- Study and analyze the performance characteristics of the vapour compression refrigeration system using nanoparticles in the refrigerant as well as in water.
- Evaluate and compare the system's COP and efficiency with and without nanoparticles..

## Specification

- Compact VCR system with nanoparticle used in refrigerant and also in water.
- Three types of Evaporation : Air cooled, submerged coil, and cooling tower spray type (humidifier type).
- Data logging through USB port
- Automatic control panel (optional)
- Variable flow rate of air and water



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

## Air-Conditioning Test Rig



- VCR system-based operation
- System Capacity : 0.5 to 2 TR (Customizable)
- Air Heating with control
- Humidification & Dehumidification facilities with humidity sensors embedded
- Temperature sensors & refrigerant rotameter
- Pressure Gauges for suction and discharge pressure
- Data Logger with USB port for data collection

## Vapour Absorption Refrigeration (VAR) Test Rig

- Aqua - Ammonia based absorption system
- Ammonia gas detector sensor for safety
- Thermic oil tank (40 ltr) with 3 kW heater
- VFD drive for Aqua - Ammonia flow control
- Data logging via USB drive
- Automatic control Panel (Optional)
- Magnetic Pump for Hot oil circulation
- High pressure Multistage pump for Aqua-ammonia Solution
- Modular structure with wheels



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

## VCR Based Milk Pasteurization System



- HMI-PLC based Fully automatic system
- Operated via Ethernet and Wi-fi
- Automatic Data logging in HMI collected in Pen drive via USB Port
- Digital Electromagnetic Flow meter for flow measurement
- PHE used for effective Heating
- Variable High torque motor with gear box for mixing
- 1 TR VCR system for rapid cooling
- Pressure and Temp. sensors
- Hot SS Tank with heater for heating
- Corrosion resistance SS pump
- Fully insulated SS tanks
- Safety measures : HP-LP switch, Pressure cutoff system, Emergency switch.

## Humidification-Dehumidification (HDH) Water Desalination Test Rig

- HDH based water desalination system
- 1 TR VCR system (Customizable as per need)
- Blower speed and Pump flow variable
- Manual Control panel
- Fully automatic control panel (Optional)
- Variable compressor (Optional)
- Corrosion free SS pumps
- Data logger for data collection with USB port
- Sensors : Water flow meter, Pressure , Temperature, TDS sensors etc. (Customizable)
- Energy meter for energy consumption measurement



**Contact Us:**

✉ info@baliefcorporation.com

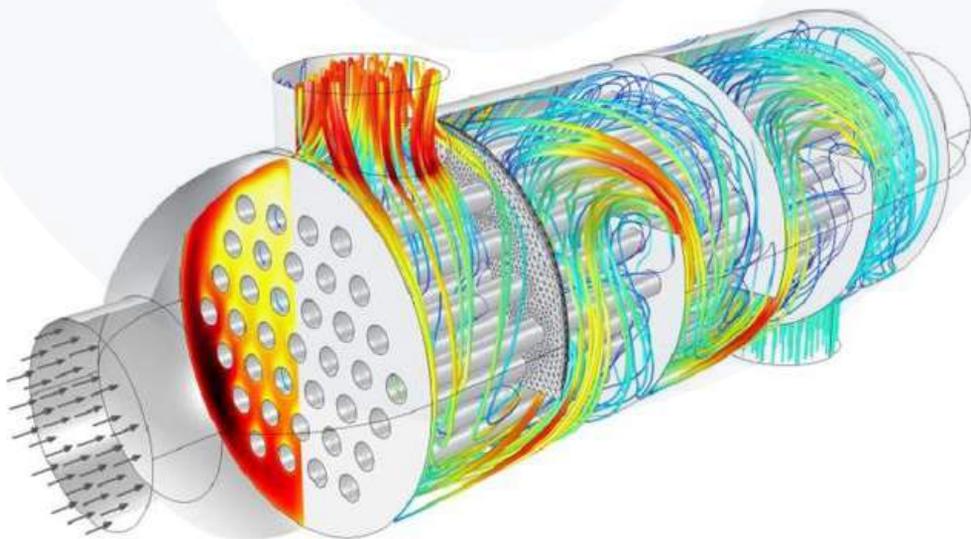
🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Heat & Mass Transfer (HMT) Lab

**"Unleashing Innovation through Advanced Heat and Mass Transfer: Where Cutting-Edge Research Meets Real-World Solutions."**



**Contact Us:**

[info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
[www.baliefcorporation.com](http://www.baliefcorporation.com)  
+91 84607 68860 | +91 79904 06122

7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Advanced Multi - Heat Exchanger Test Rig

Transforming energy efficiency through heat exchange solutions



## Specification

- Manual Control Panel (Automatic panel is optional)
- Water storage tank : up to 100 Liters, Tank MOC: SS304 with insulation
- Water Heater: up to 3 kW
- Centrifugal Pumps: 0.5 or 1 HP
- Pumps flow controlled by VFD
- Digital water flow sensor
- Three types of Heat exchanger (Tube-in-Tube Heat Exchanger, Plate Heat Exchanger, Shell & Tube Heat Exchanger ( all Heat exchanger MOC is SS304/316)
- Provision of other heat exchanger testing.
- Data logger with USB port for data collection
- Multiple process flow direction options for flexibility in testing configurations.

## Learning Outcome

- Understand the principles and operation of heat exchangers with multiple configurations.
- Gain practical skills in setting up and calibrating a multi-heat exchanger test rig.
- Analyze thermal performance across different heat exchanger designs and materials.
- Explore the impact of flow rates, temperatures, and fluid properties on heat exchanger performance.
- Acquire knowledge of maintenance and safety protocols specific to heat exchanger systems.
- Apply experimental data to validate theoretical heat transfer models and design criteria.
- Comparison of the different types of the heat exchanger performance.

## Application

- Testing and optimizing heat exchanger designs and configurations for industries
- Education and Training
- Testing and Validation
- Quality control
- Research and development for Energy and other sectors
- Product Development



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

## Guarded Hot Plate Apparatus



- Measures thermal conductivity using steady-state heat transfer
- Heating and cooling water circulation system
- 0.5 HP stainless steel (SS) pumps
- Insulated SS storage tanks
- Main test section: SS 304 construction
- Hot and cold chambers for heat transfer at the test section
- Digital flow meter for precise measurement
- Data logger with USB port for recording data
- Temperature controller for accurate regulation
- RTD-Pt100 temperature sensors for high accuracy

## Emissivity Apparatus

- The Emissivity Theorem Apparatus with an Infrared Camera measures a material's thermal radiation compared to a black body, aiding thermal studies, engineering, and material science.
- Infrared Camera for Thermal measurement
- Test Plate: Black coated
- Flat Plate Surface Heater
- Constant power regulator
- Temperature sensor: RTD Pt-100 Type
- Temp. scanner with USB Port
- Ampere and Voltage meter



## Stephen Boltzmann Apparatus



- 0-5 to 1 HP water pump (as per need)
- 1/4 HP vacuum pump
- Hot water storage tank with a capacity of 20 to 50 litres (as required)
- Black-coated test plate
- Vacuum chamber to enhance the radiation effect
- Hot and cold water circulation options
- Spherical-shaped dome
- Jacketed, well-insulated closed chamber for the dome
- Temperature sensors mounted at multiple locations

## Separating And Throttling Calorimeter Apparatus

- SS-304 mini boiler (65L, 12 kW heaters) with temp control
- Separating calorimeter for moisture removal
- Throttling calorimeter with needle valve for pressure drop
- Shell-and-tube condenser for steam condensation
- RTD Pt-100 sensors and pressure transmitters (0-10 / 0-4 bar)
- USB-based 8-channel data logger for temp & pressure
- Water collection units ( $m_1$  and  $m_2$ ) for dryness fraction
- Integrated control panel with safety features



## Air Compressor Test Rig



- Single-stage reciprocating compressor, 1-20 HP motor
- 80 – 200 L air storage tank with 0-10 bar pressure range
- RTD Pt-100 sensors for suction and discharge temperatures
- Orifice-based suction box with manometer and AVT flow sensor
- Hot-wire air velocity transmitter (0-20 m/s, 24V DC)
- Control panel with VFD, data logger, energy meter, RPM indicator
- Datalogger logger with USB data capture/ HMI based datalogger also available
- Safety features: HP switch, PSV, pressure gauge, MCB
- Compact, mobile, and safe for student operation

## Bomb Calorimeter Apparatus

- SS combustion bomb rated for 30 bar test pressure
- Insulated SS chamber with 1.5L water capacity
- Nichrome wire and cotton thread ignition system
- Motorized stirrer for uniform heat distribution
- Digital control panel with temperature rise indicator
- Sample holder, SS bucket, pressure gauge & oxygen line
- Benzoic acid calibration support for calorimeter constant
- Suitable for both solid and liquid fuel testing



# Non- Conventional Energy Lab

**"Fueling the Future with Innovative Energy Solutions: Embrace the Power of Non-Conventional Sources"**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## Solar Air Heater

- 1 to 10 m<sup>2</sup> absorber area
- Black colored absorber plate for more efficiency
- MOC: MS / Galvanized iron / SS / Aluminum
- Air blower : 0.5 to 5 HP (as per requirement)
- Air flow controlled by valve at outlet / VFD drive (optional)
- RTD-pt100 temperature sensor and controller

## Solar Still

- Customizable area: 0.5 to 3 m<sup>2</sup>
- Types: Stepped and conventional
- Pump: 0.25 to 1 HP
- Pump MOC: PP / SS
- Provision for internal reflectors
- RTD Pt-100 temperature sensors at various locations
- Data logger with USB port
- Easy provision for glass change



## Solar Concentrating Collector Test Rig



- Parabolic disk type reflector
- Mirror finished SS / Aluminum sheet or reflecting mirror
- Absorber tube : SS / Copper
- Water pump: 0.25 HP to 1 HP
- Provision of Angular position change
- Optional : Secondary reflector / auto tracking / Modified version
- Rotameter for flow measurement
- Inlet flow control valve
- Modular structure



# Water Treatment Lab

**"Revolutionizing Water Treatment Through  
Cutting-Edge Research and Innovation"**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Innovative & Sustainable Water Purification



## About System

The HDH-MD Water Desalination System combines Humidification-Dehumidification and Membrane Distillation to efficiently extract fresh water from saline sources. With automated PLC-HMI control, energy-efficient heat recovery, and a brine crystallizer for zero liquid discharge, it offers a sustainable, cost-effective solution for industries, municipalities, and off-grid use

## Application

- Industrial water treatment and wastewater recycling
- Drinking water production for coastal and remote areas
- Municipal desalination for freshwater supply
- Oil & Gas operations requiring purified water
- Research and development in water purification



## Key Feature

- Dual-process desalination
- Zero Liquid Discharge (ZLD) with brine crystallizer
- High-quality water (TDS < 100 ppm)
- Energy-efficient with heat recovery
- Fully Automatic HMI-PLC based also operated through IoT
- Scalable & adaptable
- Advanced safety with interlocks

**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Unlocking Membrane Potential



## About System

Spiral-wound nano-filtration (NF) and reverse osmosis (RO) membranes represent significant advancements in water treatment technology. NF membranes selectively allow certain ions and molecules to pass through while rejecting others based on size and charge, making them suitable for applications such as partial desalination and ion removal. Both NF and RO membranes play vital roles in industries ranging from municipal water treatment to pharmaceutical manufacturing, ensuring water purity and safety.

## Application

- Research and Development
- Quality Control in Water Treatment Plants
- Pilot Testing in Industries
- Training and Education
- Product Validation for Manufacturing

## Key Feature

- Advance water treatment Process
- Various selection of membrane
- Comprehensive Component Set
- Adaptive Membrane Technology
- Modular Scalability
- Sustainable Efficiency
- Monitoring Instruments



**Contact Us:**

[info@baliefcorporation.com](mailto:info@baliefcorporation.com)

[www.baliefcorporation.com](http://www.baliefcorporation.com)

+91 84607 68860 | +91 79904 06122

7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Advanced Adsorption For Effluent Treatment

Efficient and eco-friendly solutions for industrial wastewater



## About System

Mini - adsorption System

The Advanced Adsorption Unit for Effluent Characterization and Treatment is a state-of-the-art solution designed to purify industrial wastewater by removing a wide range of compounds. Utilizing the adsorption process, this unit ensures the effective removal of non-degradable organic compounds, making it ideal for treating groundwater, drinking water, and process water. With a robust design and advanced technology, this unit is perfect for industries looking to enhance their wastewater treatment processes.

## Key Feature

- High-Efficiency Adsorption Process
- Versatile Adsorbents selection
- Multiple options for the flow selection (Series ,Parallel, Reverse etc.)
- BOD, COD , TSS measuring advance meter for the water testing
- Dual-Column Design
- Regeneration Capability
- Durable Construction

## Application

- Groundwater Remediation
- Industrial Wastewater Treatment
- Process Water Treatment
- Academic and Industrial Research
- Absorbents Testing



## Contact Us:

✉ info@baliefcorporation.com  
🌐 www.baliefcorporation.com  
☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Flat Sheet Reverse Osmosis (RO) System

Water is the driving force of all nature



## Key Feature

- New concept for water treatment
- High Efficiency Water Filtration
- Less energy consumption
- High pressure leakproof system
- Reliable Performance
- Easy Installation and Maintenance
- Versatile Application
- Environmental sustainability
- Long-lasting Durability

## Application

- Research and Development
- Membrane Performance
- Water Quality Analysis
- Process Optimization
- Contaminant Removal Studies
- Energy Efficiency
- Water desalination

## About System

The Flat Sheet Reverse Osmosis (RO) System is a state-of-the-art water purification technology designed to provide high-quality drinking water by effectively removing impurities and contaminants. With its advanced Flat Sheet Membrane Technology, this system ensures efficient and reliable performance, making it suitable for research studies. Easy to install and maintain, the Flat Sheet RO System offers superior water purification, long-lasting durability, and user-friendly operation. Experience the difference in water quality with this innovative system.



## Contact Us:

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)  
☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## HDH Based Water Desalination Test Rig

- HDH based water desalination system
- 1 TR VCR system (Customizable as per need)
- Blower speed and Pump flow variable
- Manual Control panel
- Fully automatic control panel (Optional)
- Variable compressor (Optional)
- Corrosion free SS pumps
- Data logger for data collection with USB port
- Sensors : Water flow meter, Pressure , Temperature, TDS sensors etc. (Customizable)
- Energy meter for energy consumption measurement

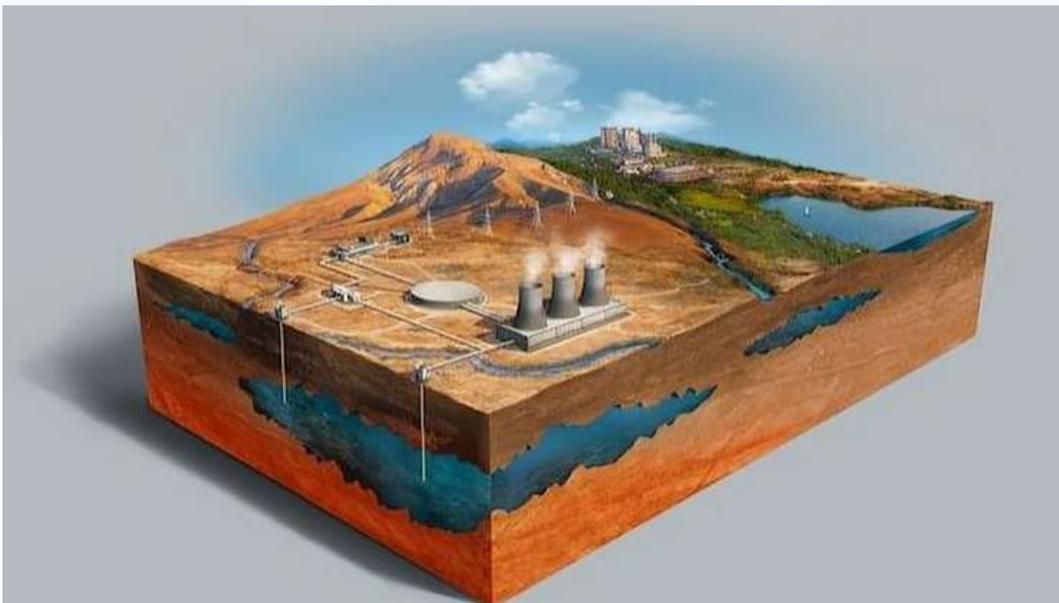
## Water Cavitation Test Rig

- Water storage tank: 50 to 500 Liter
- Water tank MOC : SS
- Water Pump : 0.5 Hp to 2 Hp
- Water pump MOC : SS
- Heater for water heating
- Orifice & Venturi
- Parallel and Series both connection
- Flow control valves
- Pressure control / flow control options
- Pressure gauges / Pressure Transmitter
- Control Panel : Manual / HMI
- Flow measurement: Rotameter / Digital flow meter (optional)
- Modular Sturdy Structure with wheels
- Fully customizable as per requirements



# Geothermal Energy Lab

**"Geothermal Energy: Harness the Earth's Heat for Sustainable, Reliable, and Efficient Power."**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## About System

The Hybrid Solar-Geothermal ORC System efficiently converts low-temperature heat into electricity using an Organic Rankine Cycle (ORC). It combines solar and geothermal energy, maximizing efficiency with organic working fluids. With optimized heat recovery, automated control, and a modular design, it's scalable, adaptable, and eco-friendly cutting carbon emissions while providing sustainable, cost-effective power.

## Application

- Solar – Geothermal Power Generation
- Industrial Waste Heat Recovery
- Remote & Off-Grid Power Solutions
- Sustainable Energy Projects
- Microgrid & Distributed Power Systems
- Process heating applications

## Key Feature

- Capacity: up to 50kW (customizable)
- Hybrid Solar-Geothermal for high efficiency
- Low-temp operation for solar & geothermal
- Organic fluid for better performance
- Optimized heat recovery for efficiency
- Automated PLC-HMI control
- Scalable & modular design
- Eco-friendly with low carbon footprint



## Contact Us:

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)  
☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## Geothermal Based Milk Pasteurization System

- HMI-PLC based Fully automatic control system with data logging
- Manual control system (optional)
- Operated via Ethernet and Wi-fi
- Digital Electromagnetic Flow meter for flow measurement
- Variable High torque motor with gear box
- 1 TR VCR system for rapid cooling
- Pressure and Temp. sensors
- Hot SS Tank with heater for heating
- Corrosion resistance SS pump
- Fully insulated SS tanks
- Safety measures : HP-LP switch, Pressure cutoff system, Emergency switch.

## Geothermal Energy Assisted Water Desalination System

- Feed water : Geothermal water
- Storage Ware tank MOC : PVC / PP
- Storage tank capacity : 100 to 1000 Ltr
- Fresh water tank MOC : Food grade pure virgin plastic
- Filtration process includes: Bag filters, Sand filter, Carbon filter , water softener, Commercial RO
- RO capacity : 100 to 1000 LPH (Customizable)
- Water cooler: Up to 100 liter (optional)
- Level switch for auto cutoff and auto start the pumps based on water level
- Semi automatic Control system
- Modular structure with wheels



## Geothermal Energy Assisted Air Food dryer



- Geo-Thermal Hot Water Utilization for the heating the air
- Geothermal water Flow control valve and rotameter for flow measurement
- Air blower speed control by regulator
- Temperature controller for air heating
- Insulated air tight Food drying chamber with door locking
- Drying chamber internal and Trays MOC : SS / Aluminum
- Flexible insulated air duct
- Modular Design Structure with movable wheels
- Fully Customized based on Application



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Civil Engineering Lab

**"Shaping the Future of Infrastructure:  
Excellence in Civil Engineering Lab Solutions."**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## Learning Outcome

- Investigate rainfall/runoff for catchments of various slopes
- Demonstrate erosion from water flow
- Study interflow impact on hydrographs
- Observe sediment transport and river meanders
- Measure and compare cone of depression for wells
- Examine de-watering of excavation sites.
- Analyze confined aquifer well flow.
- Demonstrate island watersheds with rainfall and wells
- Investigate scour around bridge piers

## Specification

- Catchment Area for rain flow and river flow simulator : 2 m length \* 1 m width (customizable)
- Water pump : 0.5 HP to 5 HP
- Water storage tank : 100 L to 1000 L
- Water flow totalizer
- Water rotameter
- Manometric tubes arrangement
- Acrylic doors for visualization rain
- Screw jack mechanism for tilting bed
- Manual control panel
- Different types of obstacles and convergent-divergent modules
- Fully automatic system (optional)





## Planetary Ball Mill

- Fine grinding, mixing, and mechanical alloying of materials
- Grinding jars : 2 to 4
- Volume of each jar : 50 / 100 / 500 ml
- Working mode : 2 or 4 jar used at a time
- MOC Jar & balls : SS 304 / 316L
- Volume capacity: 50 ml to 2 Liter
- Speed Range: 0 to 500 RPM
- Speed control mode : Frequency
- Transmission mode : Gear drive
- Grinding Ball: Based on Applications
- Control Panel : Manual
- Input size : soft & crispy material < 10 mm, other material < 3mm
- Output granularity : maximum 0.1 micron



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

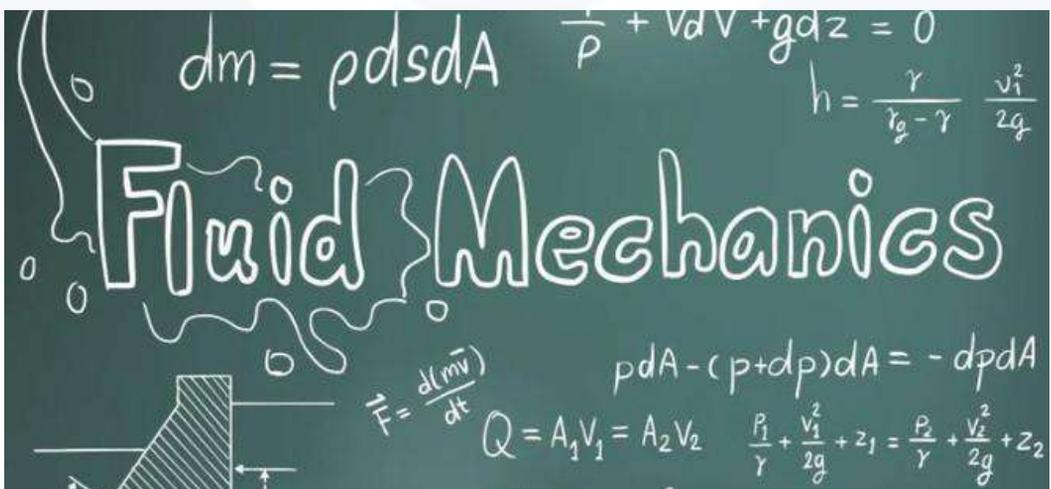
🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Fluid Mechanics Lab

**"Where Precision Meets Creativity—  
Transforming Complex Fluid Dynamics into  
Practical Solutions and Innovative Designs."**



**Contact Us:**

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Multi-Pump Test Rig

Achieve precision and efficiency in pump testing



## Specification

- HMI-PLC based fully automatic system with USB data logging & Live monitoring
- Storage Tank capacity : Up to 500 Liter
- Centrifugal Pump: 0.5 - 2 HP (Up to 150 LPM)
- Gear Pump: 0.5 - 2 HP (up to 50 LPM)
- Reciprocating Pump: 0.5 - 2 HP (up to 30 LPM)
- Digital Electromagnetic Water Flow sensor and Torque Sensor compatible with PLC
- Motorized Globe Valve for flow control
- Motorized Ball Valve for process selection
- Easy Interchangeable provision of the impeller in Centrifugal pump
- Acrylic casing used for centrifugal pumps to visualize cavitation effects with various impeller types
- Energy consumptions of pumps and total system

## Learning Outcome

- Understand the principles and operation of multiple pump systems.
- Learn to set up and calibrate a multi-pump test rig.
- Analyze the performance characteristics of different pump types under varying conditions ( like flow, pressure etc. )
- Gain skills in measuring and interpreting flow rates, pressures, and efficiencies.
- Develop the ability to troubleshoot and diagnose issues within pump systems.
- Assess the energy consumption and efficiency of pump configurations.
- Explore the impact of different fluid properties and different impeller on pump performance.
- Enhance practical knowledge of maintenance and safety procedures for pump systems.



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Multi Purpose Flow Demonstration Flume

Versatile Flow & Wave Insights



## About System

The Multi-Purpose Flow Demonstration Flume is a closed-loop system for studying flow and wave behavior. In flow studies, water from a storage tank flows through a transparent acrylic chamber, where objects can be placed to observe flow patterns and pressure changes, with flow controlled by a valve and rotameter. For wave studies, an oscillator generates waves, allowing analysis of wave impact on objects and coastal protection strategies. A built-in scale measures water height and wave intensity. The system ensures efficient water use and provides clear visualization, making it ideal for hands-on learning in fluid mechanics.

## Key Feature

- Dual study function for flow and wave analysis
- Transparent acrylic chamber for clear visualization
- Flow control valve and rotameter for precise adjustments
- Oscillator mechanism for adjustable wave generation
- Ideal for hands-on learning in fluid mechanics and wave dynamics.



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)  
🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)  
☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

## Bernoulli's Theorem Apparatus



- Pump capacity : 0.25 to 1 Hp
- Single piece Transparent Acrylic Bernoulli's Test Section
- Piezometric Transparent tubes at different locations of Bernoulli's test section for pressure difference measurement
- Acrylic tanks at inlet and outlet of Bernoulli's test section for maintaining pressure head
- Measuring Scales for each piezometric tubes
- SS Measuring Tank
- Level Indicator
- Storage Reservoir Tank
- MS powder coated Structure
- Modular Structure with wheels

## Flow Characteristics Apparatus (Bernoulli's, Venturi, Orifice and Rotameter) (Customizable)

- Pump capacity : 0.25 to 1 Hp
- Single piece Transparent Acrylic Bernoulli's and orifice Test Section
- Piezometric Transparent for pressure difference measurement
- CWC type Rotameter (available in different capacity)
- Venturi & orifice (Customizable size)
- Mercury (Hg) filled U-tube manometer
- SS Measuring Tank
- 50 Ltr water Storage Reservoir Tank
- MS powder coated Structure
- Modular Structure with wheels



## Laminar Flow Apparatus



- The laminar flow table is a crucial tool in fluid dynamics labs, allowing users to study smooth, predictable fluid flow. It helps visualize flow patterns and understand key principles like viscosity, pressure gradients, and boundary layers.
- Pump capacity : 0.5 to 2 Hp
- Flow table MOC: SS 304
- White Flat flow table to visualize flow lines generated by pigment
- Acrylic Cover for protection
- Pump, Water tank and Pigment Tank MOC: SS304
- Modular Structure with wheels

## Reynold's Apparatus

- This setup demonstrates the effect of Reynolds number on pipe flows, showcasing laminar, transitional, and turbulent regimes. As a key dimensionless parameter, Reynolds number helps classify flow behavior based on the balance of dynamic and viscous forces.
- SS Pump capacity : 0.5 HP
- Globe valve for Precision Flow control
- Acrylic Tube to visualize the flow using pigment
- Tanks MOC : SS 304
- MS powder coated Structure
- Modular Structure with wheels



## Major And Minor Losses In Pipes



- Pump capacity : 0.25 to 1 Hp (as per need)
- Different Pipes : 1" GI, 1/2" GI , 1" UPVC , 1/2" UPVC (Customizable)
- Different connections : Sudden expansion, Sudden contraction, Elbow, Bend, Valve (Customizable)
- By-pass for Flow control
- All in one connections Mercury (Hg) filled U-tube manometer
- SS Measuring Tank with level indicator
- 50 Ltr water Storage Reservoir Tank
- MS powder coated Structure
- Modular Structure with wheels

## Centrifugal Pump Test Rig

- Centrifugal pump capacity : 0.5 to 2 Hp
- Transparent casing of pump for visualize cavitation and impeller
- Easy provision of impeller change
- Torque sensor, flow sensor, pressure sensor, temp. sensors
- Manual Control panel
- Fully automatic panel (optional)
- Data logging Via USB



## Reciprocating Pump Test Rig

- Reciprocating pump capacity : 0.5 to 5 Hp (customizable)
- Pressure regulating Gate valve
- Pressure gauges and Rotameter
- 50 Ltr Water storage tank
- Bypass valve for flow control
- Manual Control panel
- RPM indicator
- Energy Meter
- Modular structure with wheels



## Francis Turbine Test Rig



- Pump capacity : 1 to 10 Hp (as per need)
- Venturi section for flow measurement
- Rope brake Dynamometer with scalable load indicator
- Alternator For Power Generation (Optional)
- Manual control panel
- Automatic control panel (optional)
- Digital flow meter (optional)
- VFD provision for water flow rate change
- Pressure gauges
- Digital pressure transmitter (optional)
- Safety measures: HP switch, Emergency switch
- Provision of guide vane angle change in turbine
- Tank with epoxy / PU / marine coating to reduce corrosion

## Propeller Type Water Current Meter

- The rotation of the Water Current Meter is sensed by sensor & gives pulsed output signal.
- Operating Range: 0.3 to 3.5 Meters per second
- Accuracy: For velocities  $>0.3$  m/s, 0.5% Full scale
- Velocity Indicator: Digital Water Velocity Indicator



# Petroleum Engineering Lab

**"Fueling the Future with Innovative Energy  
Solutions: Embrace the Power of Non-  
Conventional Sources"**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Tri-Axial Core Fracturing Test Unit

Precision meets reliability in every fracture

## Specification

- Triaxial Pressure/force (Confining, Axial and Lateral )
- Core Holder MOC : SS 316L
- Customizable to fit core samples of various sizes Up to 6 Inches
- Air Driven Gas Booster Pump working Up to 15,000 psi
- Working Pressure Range: Up to 10,000 psi
- Water bath temperature Range: Up to 80 °C
- Hydraulic pumps working pressure Up to 10,000 psi (Servo operated Optional)
- Modular Design
- Consist of Vacuum Pump, Air Compressor
- Safety : Pressure Safety Valve, Overflow Point, Auto Pressure cutoff system & Air compressor



## Learning Outcome

- Understand the core testing process.
- Comprehend the principles of core fracturing using a triaxial system.
- Analyze the effects of supercritical CO<sub>2</sub> (SC-CO<sub>2</sub>) on rock fracture behavior.
- Learn to control and adjust pressure in a triaxial core system.
- Assess the impact of temperature variations on core fracturing.
- Utilize acoustic emission sensors to detect and analyze fracture events.
- Understand the significance of pressure variations in fracturing.
- Collect and analyze experimental data.

## Application

- Academic and industrial research for geological studies and core testing.
- Applied in petroleum engineering for reservoir characterization and hydraulic fracturing.
- Geothermal energy, seismology & environment engineering research
- Integral to rock mechanics for fracture analysis and strength testing.



## Contact Us:

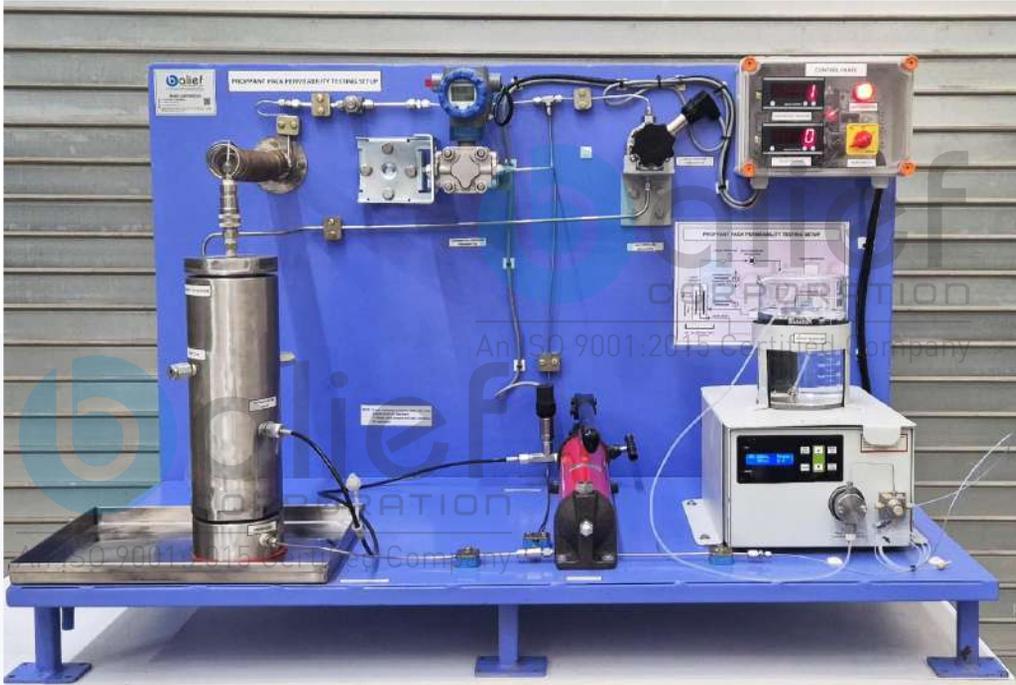
✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

Testing Proppants. Simulating Reality



## About System

A compact, high-pressure laboratory test system designed to evaluate the permeability of proppant materials under simulated reservoir conditions. The setup includes a robust stainless steel proppant cell rated up to 4000 psi, a precision-controlled metering pump, differential pressure monitoring, and a hydraulic confinement mechanism. It enables accurate measurement of pressure drop and fluid flow behaviour, offering safe and repeatable testing ideal for research, quality validation, and material benchmarking.

## Application

- Proppant performance testing
- Hydraulic fracturing research
- Oil & gas R&D
- Academic lab studies
- Material benchmarking under stress
- Proppant quality control in manufacturing

## Key Feature

- SS316 proppant cell (4000 psi)
- Precise metering pump (up to 6000 psi)
- Differential & line pressure transmitters
- Manual hydraulic confinement (could be automated)
- Back pressure regulation
- Digital control panel
- Safe, portable, and user-friendly design
- Modular design for easy maintenance



**Contact Us:**

✉ [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

🌐 [www.baliefcorporation.com](http://www.baliefcorporation.com)

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India



## Proppant Transport Test Rig

- Fully transparent acrylic/glass test section for visualization and analysis of experiments
- Used in hydraulic fracturing to transport and place proppants into fractures in subterranean formations.
- Agitator with motor for proper mixing
- Heater with Temperature Control
- Up to 100 Liter Insulated tank
- Manual Control valves
- Electro-magnetic flow meter
- Centrifugal pump
- Manual control panel



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

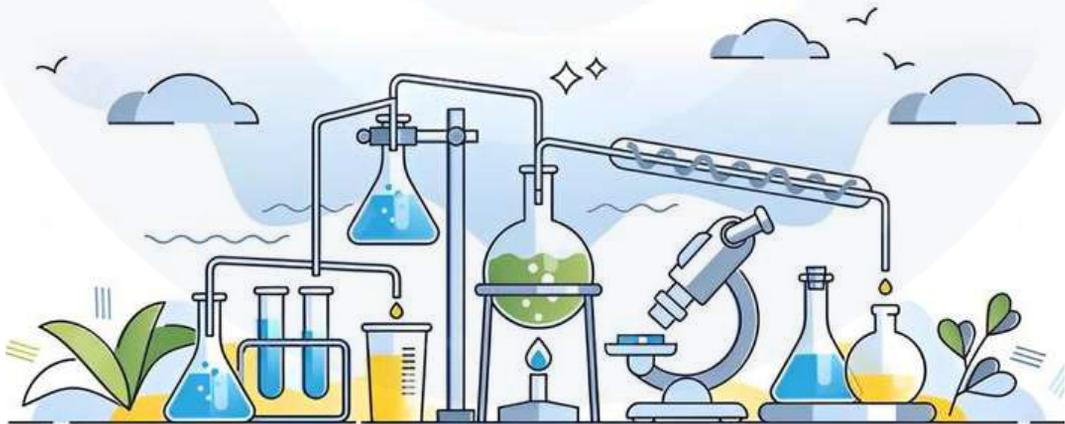
 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Chemical / Chemistry Lab

**"Innovating at the Intersection of Chemistry  
and Engineering to Create Sustainable  
Solutions for Tomorrow's Challenges."**



**Contact Us:**

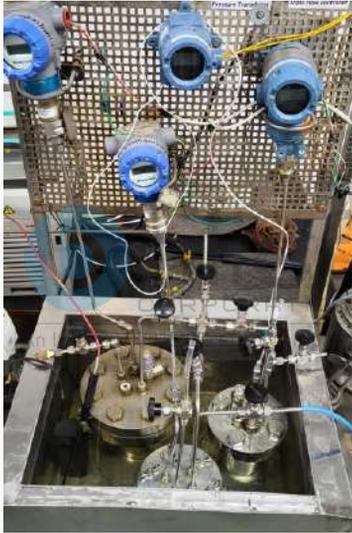
 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

## Vapour Liquid Equilibrium (VLE) Setup



- Temperature-controlled water bath
- Working Temperature Range: Up to 80 degree C
- Working Pressure Range: -1 to 140 Bar (customizable)
- MOC : SS 316L
- Volume: 50 ml to 2 Liter
- Equilibrium cell, buffer cell
- Pressure sensor with display , HART-type
- PT-100 Temperature sensor
- Manual control panel includes Data logger for pressure and temperature vis USB port

## VLE Setup (Kinetic Reaction)

- Temperature-controlled water bath
- MOC: SS316L
- Kinetic reaction cell
- Twin blade Liquid / Gas stirring
- Magnetic seal
- High torque motor



## Catalytic Reactor / Autoclave

- Hot Plate Magnetic stirrer reactor
- Reactor volume capacity: 40 - 150 ml (customizable)
- Reactor MOC: SS316L
- Gas inlet Needle valve
- Temperature and Pressure Monitoring
- Easy to Operate



## High Temperature Reactor (Kinetic)



- Mechanical stirring
- Volume: 50 - 1 Ltr (Customizable)
- Motor speed controlled by VFD drive
- Temperature and Pressure Monitoring Display
- MOC of reactor : SS316L
- Jacketed reactor
- Circulator for High temperature
- Programmable controller
- High Torque Motor: 0.5 to 1 Hp



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# Others Projects

**“Commitment to Excellence in Research:  
Bridging Gaps Between Theoretical  
Knowledge and Practical Applications for a  
Better Future.”**



**Contact Us:**

 [info@baliefcorporation.com](mailto:info@baliefcorporation.com)

 [www.baliefcorporation.com](http://www.baliefcorporation.com)

 +91 84607 68860 | +91 79904 06122

 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

## Vacuum Curing Oven



## Vibration Based Crack Detection in Pipe Test Rig



## High Speed Tubular Centrifuge



## Smart Steam Disinfection Tunnel



Many more.....

## Contact Us:

✉ info@baliefcorporation.com

🌐 www.baliefcorporation.com

☎ +91 84607 68860 | +91 79904 06122

📍 7, Somnath Industrial Estate, Near Narmada Canal, Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring Road Circle, Valad, Gandhinagar- 382355, (Ahmedabad Region), Gujarat, India

# TRUSTED BY

## INDUSTRIAL CLIENTS



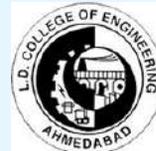
IndianOil

# IndianOil

*The Energy Of India*



## ACADEMIC CLIENTS



# MASS PRODUCTION PARTNERS

"We specialize in mass production for our vendor partners, ensuring high-quality and efficient manufacturing."



**Effluent Treatment Plant (ETP)**



**Air Purifier**



**Water & Oil Chiller**



**Air Cooler**



**Join us for the best solutions with smart innovation**

# CONTACT US



**+91 84607 68860 | +91 79904 06122**



**info@baliefcorporation.com**



**www.baliefcorporation.com**



**7, Somnath Industrial Estate, Near Narmada Canal,  
Ahmedabad - Himatnagar Highway, Near Nana Chiloda Ring  
Road Circle, Valad, Gandhinagar- 382355,  
(Ahmedabad Region), Gujarat, India**

