



Innovative Wastewater Treatment, Recycling, Sludge Management and Zero Liquid Discharge Solutions Worldwide





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Industrial Wastewater Treatment

Availability of water and regulatory compliance of treated wastewater are two major challenges associated with any water intensive manufacturing industry.

We understand your water and wastewater needs and have solutions for you!

A.T.E. HUBER Envirotech (AHET) is an expert in providing wastewater treatment solutions. AHET is one of only a handful of suppliers worldwide supplying a complete range of technology solutions for industrial wastewater treatment encompassing primary treatment, secondary treatment, tertiary treatment, recycling, zero liquid discharge, and sludge management.

A.T.E. HUBER Envirotech (AHET) is a joint venture between A.T.E., India, and HUBER SE, Germany. A.T.E. is a diversified group of companies with formidable experience in engineering, manufacturing, sustainability, IoT, and automation solutions across industry segments. HUBER SE is a global leader in the field of water, wastewater, and sludge treatment and provides solutions to global water problems.

Our philosophy is: **convert waste to wealth**. This is applicable for both wastewater as well as sludge. Be it generating biogas from wastewater, recycling precious clean water from wastewater, or recovering energy and nutrients from bio-sludge, we do everything to optimize resources.

Our team of experts in the field of wastewater and sludge management will be pleased to support you for improving your existing Effluent Treatment Plants (ETP), or for your upcoming new projects.

Let us work together to save water and reduce pollution!

A.T.E. HUBER Envirotech at a glance

- 20 + years of experience
- 300 + wastewater treatment projects commissioned
- 12 + countries where wastewater treatment projects executed
- 40 + wastewater recycling projects executed
- 15 + projects with zero liquid discharge norms accomplished

Our projects worldwide



Bangladesh



Dominican Republic



Egypt



Ethiopia



India



Indonesia



Malaysia



Nigeria



Philippines



Puerto Rico



Thailand



USA



Uzbekistan



Vietnam



Zambia

Industry segments served

Sectors	Maximum flow handled	Maximum COD handled
 Chemical	4000 m ³ /day	4000 ppm
 Food & Beverage	1800 m ³ /day	2000 ppm
 Housing & Hospitality	150 m ³ /day	250 ppm
 Paper & Pulp	14000 m ³ /day	3500 ppm
 Petrochemical	4800 m ³ /day	6500 ppm
 Pharmaceutical	500 m ³ /day	13000 ppm
 Power	4800 m ³ /day	<500 ppm
 Steel	2800 m ³ /day	<500 ppm
 Sugar & Distillery	3600 m ³ /day	4500 ppm
 Textile	4000 m ³ /day	2400 ppm

1. Primary Treatment

1.1 Coarse & Fine Mechanized Screens (Rotomat®Ro9)

The HUBER Micro Strainer ROTAMAT® Ro9 is based upon a unique system that allows the combination of screening, washing, transport, compaction and dewatering in a single unit.

- Best cost/performance ratio
- Reduced screenings volume due to compaction
- Installation directly in the channel or in a tank
- Wide range of operating flow rates
- Wedge wire screen basket or perforated plate basket available



1.2 Dissolved Air Flotation (HDF®)

Dissolved Air Flotation with the HUBER HDF®, provides a significantly improved flotation process with a special inlet structure that provides optimum control of the flow within the flotation tank.

- Compact design, small footprint
- Robust construction
- Operator friendly and energy efficient air saturation system
- Chemical treatment stage to increase separation efficiency (optional)



2. Anaerobic Treatment

2.1 AVR®-HDF®

AVR®-HDF® is a unique, high-rate bio-degradation process carried out in an anaerobic venturi reactor (AVR®) that works well even at high mixed liquor suspended solid (MLSS) concentration with the help of the HUBER HDF®.

- Upto 80-90% reduction in COD
- Upto 50% reduction in anaerobic reactor volume
- Operates well even with high MLSS
- Better process control with reduced maintenance



2.2 AVR®-S Disc®

AVR®-S Disc® is a unique high-rate anaerobic bio-degradation process carried out in an anaerobic venturi reactor (AVR®) that works well even at high mixed liquor suspended solid (MLSS) concentration with the help of the HUBER S-Disc®.

S-Disc® is an inclined, slowly rotating filter disc that separates flocculated sludge from filtrate that helps thickening of sludge.

- 80-90% reduction in COD
- Upto 50% reduction in anaerobic reactor volume
- Upto 30% reduction in footprint
- Operates well even with high MLSS
- Better process control with reduced maintenance
- Very low power consumption for S-Disc®



2.3 Anaerobic MBR

Anaerobic MBR is a single stage treatment unit designed for low strength (COD < 1500 mg/l, BOD around 750 mg/l) wastewaters. The quality of treated wastewater from the anaerobic MBR is suitable for reuse. No air is required for the operation of an anaerobic MBR. MBR scouring is done using biogas generated in the anaerobic MBR itself.

- 25% less space required
- 30% less power consumption
- 90% less sludge generation
- Produces treated water quality suitable for reuse
- Compact anaerobic bioreactor design
- Simple and modular design for quick and easy maintenance
- Low operating cost
- Option of remote monitoring



3. Aerobic Treatment

3.1 ASP-HDF®

ASP-HDF is a high rate activated sludge process (ASP) that works well even at high mixed liquor suspended solids (MLSS) concentrations with the help of the HUBER HDF®.

- Coupled with an upstream anoxic zone for effective de-nitrication and nutrient reduction
- Facilitates high MLSS concentration up to 15000 ppm
- 90% reduction in COD
- Reduced aeration tank volume
- Reduced footprint up to 30%



3.2 ASP-S Disc®

ASP-HDF is a high rate activated sludge process (ASP) that works well even at high mixed liquor suspended solids (MLSS) concentrations with the help of HUBER S-Disc®

- Coupled with an upstream anoxic zone for effective de-nitrication and nutrient reduction
- Facilitates high MLSS concentration up to 15000 ppm
- 90% reduction in COD
- Reduced aeration tank volume
- Reduced footprint up to 30%
- Very low power consumption for S-Disc®



3.3 Aerobic MBR

- A compact aerobic bio-reactor design
- High quality treated effluent suitable for reuse
- Simple and modular design for quick and easy installation
- Low operation and maintenance cost
- Option of remote monitoring



4. Advanced Oxidation

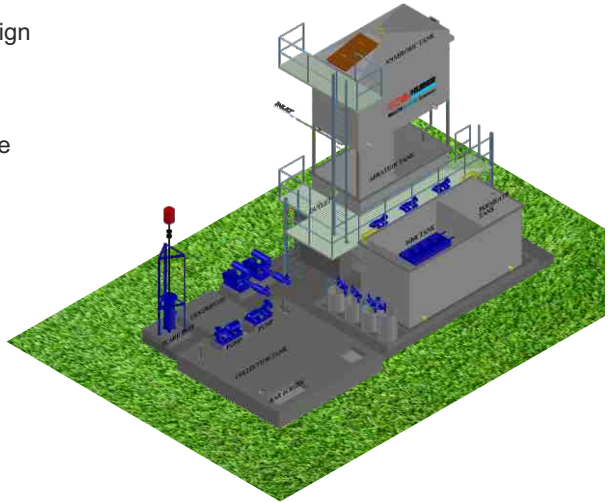
Advanced oxidation is a process used for removing residual COD or colour from the treated effluent, or for destruction of toxic substances like cyanides etc, or simply for improving the biodegradability of wastewater.

- Compact design
- High quality of treated water that is safe for disposal or for reuse
- Easy to operate and control
- Option of remote monitoring

5. Packaged Effluent Treatment Plants (ETP)

The treatment process comprises mechanised screening, anaerobic biodegradation and on aerobic MBR. The combination of anaerobic and aerobic processes result in very good colour and COD reduction in the treated effluent.

- Compact FRP/ GF/ SS tank design
- 40% less space required
- Virtually no civil work required
- Modular and wide capacity range
- 10 m³/d to 150 m³/d
- Easy and quick installation
- Installation underground/above ground possible
- Low operating cost
- Low chemical consumption
- Low sludge generation
- Low power consumption
- Option of remote monitoring



6. Packaged Sewage Treatment Plant (STP)

The treatment process comprises steps for sedimentation, anaerobic-aerobic biodegradation and disinfection – all combined in a single FRP tank. The combination of anaerobic-aerobic biological system results in the removal of BOD and nitrogen in the treated stream. The air pumps used for aeration enable perfectly balanced mixing.

- 2-stage anaerobic-aerobic treatment process
- Compact, single FRP tank design
- Underground or overground installation
- Modular construction
- Low operating cost
- Option of remote monitoring



7. Anaerobic MBR STP

Anaerobic MBR STP is a single stage treatment unit designed for treating the low strength (COD - 750 mg/l, BOD around 350 mg/l) wastewaters such as Sewage and Laundry wastewater.

The quality of treated wastewater from the anaerobic MBR STP is suitable for reuse for cooling towers or for toilet flushing.

Benefits of an anaerobic MBR over an aerobic MBR

- 25% less space
- 30% less power consumption
- 90% less sludge generation
- 350 litres biogas generated per kg of BOD reduction per day



8. Wastewater Recycling

8.1 SUFRO®

The SUFRO® system comprises high quality submerged ultrafiltration (UF) membrane with 38 nm pore size followed by a reverse osmosis (RO) plant. This technology offers huge benefits in terms of savings in chemicals, balance of equipment, backwash water requirements, and space.

- A unique system that protects downstream RO membranes as well as upstream biological treatment
- Can withstand high inlet suspended solids load up to 1000 ppm
- 50% smaller footprint compared to conventional UF
- Easy to operate and control
- Plug and play
- Robustly engineered RO recycle systems offers maximum recovery and enhanced membrane life
- Option of remote monitoring



8.2 Multi-stage Reverse Osmosis (RO) Recycling Plant

- Fully automated PLC-based RO recycling plant
- Four-way control loop of operation that minimises possibility of operator errors
- Consistent performance
- Minimum operator intervention
- Compact design
- Enhanced membrane life
- Low operating cost
- Option of remote monitoring



9. Evaporators

9.1 Multi-Effect Evaporator (MEE)

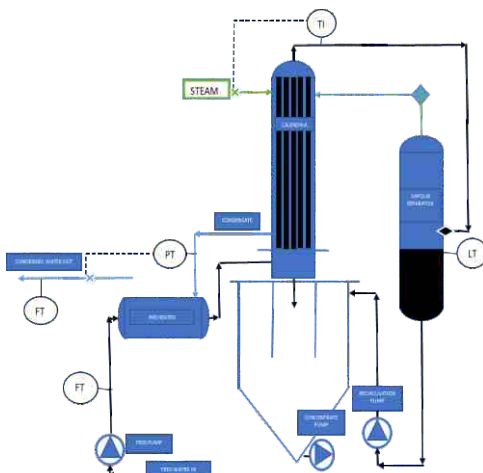
- Fully automated PLC-based multi-effect evaporator
- High level of process automation
- Consistent performance
- Minimum operator interventions
- Option of remote monitoring



9.2 Mechanical Vapor Recompression (MVR)

Mechanical Vapor Recompression (MVR) evaporators are one of the energy efficient technologies in evaporation. The steam consumption in MVR is negligible.

- The system can generally concentrate up to 16%-20% w/v of salt generation the concentrated effluent is then fed to MEE
- Lowest possible opex
- MVR will require appx. 15 kg steam/kL of feed, and 20 kW power/kL of feed



9.3 Thin Film Dryer

- Concentrated effluent from the MEE is spread on the inside surface of a jacketed vessel
- The steam in jacket evaporates water to collect solids with 10% moisture at the base
- The dried solids are wiped using a rotating scraper



Sludge Management

A major point of concern for industry is the disposal of sludge generated from wastewater treatment. Although the treatment technology has moved from physio-chemical to biological, which has cut down sludge generation substantially, the quantity of sludge generated is still huge. And, it is usually mandatory to send the dewatered sludge to very special landfill sites which costs a lot.

The ever increasing transportation and landfilling cost is making sludge disposal unaffordable. The only way to save money is to reduce the weight and volume of the sludge to be transported.

The sludge produced in the wastewater treatment usually comprises of 20% solids + 80% water. Thus, obviously, for the transportation of the sludge, the industry also pays for the weight of water present in the sludge. This makes it logical to try to achieve maximum dryness of the sludge before its disposal.

With conventional techniques, achieving even 20% dryness of sludge is difficult, and the situation only worsens during wet weather or monsoons. AHET's scientifically designed sludge management solutions help to reduce the weight and volume of the sludge significantly, leading to substantially lower sludge disposal cost!

Further, reducing the water content of the organic sludge also increases its thermal value. With the permission of local authorities, industries may be able to utilize the dried sludge as a supplement to other fuels for generating energy.

1. HUBER Disc Thickener S-DISC®

S-Disc® is an inclined, slowly rotating filter disc that separates flocculated sludge from filtrate that helps thickening of sludge.

- Simple operating principle
- Minimum operator intervention
- High operating reliability
- Compact and closed design
- Accessible for full inspection
- Minimised wash water demand
- Wear-resistant stainless steel parts
- Noiseless operation
- Specific power consumption $< 0.02 \text{ kWh/m}^3$
- Hundreds of installations worldwide



2. HUBER Rotary Screw Thickener S-DRUM

S-Drum is inclined wedge section basket. A screw rotating with a variable speed, conveys the sludge gently upwards through the inclined basket. The water drains through the basket.

- High solids handling capacity
- Minimum operator intervention
- High operating reliability
- Compact and closed design to eliminate odours
- Wear-resistant stainless steel parts
- Low wash water demand
- Specific power consumption
 $< 0.02 \text{ kWh/m}^3$
- Hundreds of installations worldwide



3. HUBER Screw Press Q-PRESS®

The Q-PRESS® is a screw press with a conical screw shaft and cylindrical sieves consisting of three treatment zones: inlet and drive zone, thickening and dewatering zone, and press zone with pneumatic counter-pressure cone.

- High dewatering performance
- Minimum operator intervention
- High operating reliability
- Compact and closed design to eliminate odours
- Specific power consumption of
 $0.02\text{-}0.04 \text{ kWh/kg}$ of dry solids
- Hundreds of installations worldwide
- Option of mobile units



4. HUBER Bogenpress B-PRESS

It is a belt press dewatering unit comprises high-performance pre-dewatering zone with chicanes, the bow zone, plus two perforated dewatering rolls ensure optimal pre-treatment and compaction of the flocculated sludge.

- Versatile sludge press
- High efficiency
- Lower polymer and power consumption
- High capacity due to extended pre dewatering zone
- Application – optimised design
- Available in 3 sizes



5. Solar Active Dryer

The HUBER Solar Active Dryer is a simple, natural, accelerated sludge drying system. The specially designed turner helps sludge spreading, granulation and transport in a constructed greenhouse.

- Continuous sludge feeding possible, even during wet weather or monsoons
- Suitable even for small sludge volumes from 1,000 tons per annum
- Sturdy design, low energy consumption of 0.015 kWh/kg of sludge
- True backmixing of sludge for a perfect drying and granulation
- Modular design
- Fully automatic operation (including feeding and withdrawal system which is optional)
- Virtually operator-less operation
- Option of remote monitoring
- Optional use of exhaust heat to support solar drying



Value Added Services & Products

The nature of industrial wastewater is complex. What adds to this complexity is the ever varying quality and quantity of wastewater. Since the characteristics of the wastewater keep fluctuating due to changes in product mix or product quantity, changes in raw material, changes in process chemicals or combinations thereof.

Managing a wastewater treatment plant with these dynamic complexities is a very difficult task. One really needs to be an expert to understand and operate a wastewater treatment plant at an optimum level. This is a critical job as any improper operation and maintenance leads to compliance issue or the cost over run.

At AHET we understand this problem. Our experts have devised value added services such EnviroCOLA® and Experts On Call (EOC) specially for you. These services offer hand holding and assistance to operators for effective and efficient operation of your wastewater treatment plants.

AHET's value added services along with our value added products like bioenzymes, micronutrients and biocultures help you maintain your wastewater treatment plant operations at an optimum level, reduce your operating costs and help you to ensure statutory compliance.

1. Value Added Services

1.1 EnviroCOLA

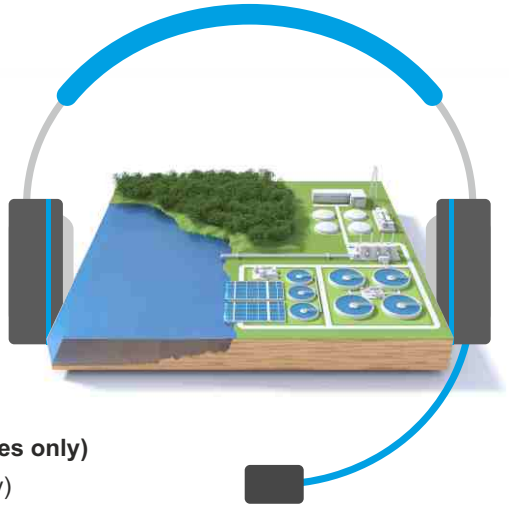
- A customized tool to monitor your wastewater treatment plant performance
- Easy access to your wastewater treatment live data on the go
- Provides history and trends of all parameters
- Calculates and provides key performance indicators that gives deeper understanding of plant performance
- Multi parameter comparison for root cause analysis
- Early indication of common faults and actionable insights that help avoid impending failures
- Automatically sends daily, weekly, monthly reports on plant performance and operating costs
- EnviroCOLA can also provide mobile alerts for critical parameters, when they exceed the operating set points. These alerts are accompanied with associated risks and suggested corrective actions.



1.2 Expert On Call

Our panel of experts provides consultations on wastewater treatment, recycling and zero liquid discharge, sewage treatment, headworks, and sludge treatment for manufacturing plants and municipal corporations. Set up a call with our experts if you are looking for:

- Improvement in wastewater treatment operation
- Reducing wastewater treatment operating cost
- Reducing frequency of wastewater treatment upsets
- Ease and higher level of compliance
- An expert opinion to reduce technical risk of your planned upgradation or modification



To register for consultation (nominal charges only)

- Call on: 1800 123 2830 (toll-free, India only)
- WhatsApp: +91-93723 77374 / +91-83568 53561
- Email: eoc@atehuber.com / ccc@ategroup.com

2. Value Added Products

2. 1. Bio Enzymes

2.1.1 BBE-1

BBE-1 is a concentrate optimised for fats, oil and grease removal. It includes a mixture of non-bacterial active enzymes with a proprietary non-ionic surfactant package and catalyst.

The surfactant in the BBE-1 concentrate acts as a wetting agent, reducing surface tension and improving the enzymes' ability to cleave organic contaminants, thereby breaking down fats, oil and grease molecules.



2.1.2 BBE-2

BBE-2 is concentrate that is a proven blend of active non-bacterial enzymes that enhances bacterial effectiveness in breaking down complex organics in wastewater, thus reducing wastewater COD.

- Decreases process upsets
- Removes malodours
- Achieves a balanced bacterial population
- Reduces residual/refractory COD

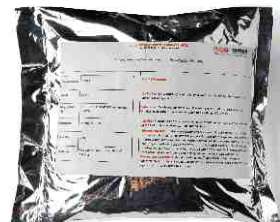


2.2 Micronutrients

2.1.2 BBM-1

BBM-1 is a Mixture for anaerobic bioreactors that is a ready-mix mineral complex provided to improve activity of anaerobic microorganisms. The minerals act as co-factors for enzymatic processes and boost microorganism metabolism.

- Improves anaerobic biomass activity
- Achieves consistent COD reduction
- Improves biogas production
- Improves the overall system efficiency



2.2.2 BBM-2

BBM-2 tablets for aerobic and anaerobic bioreactors comprise a vitamin complex designed for improving the health and activity of microorganisms. The vitamins are required by bacteria for boosting cell multiplication and metabolism.

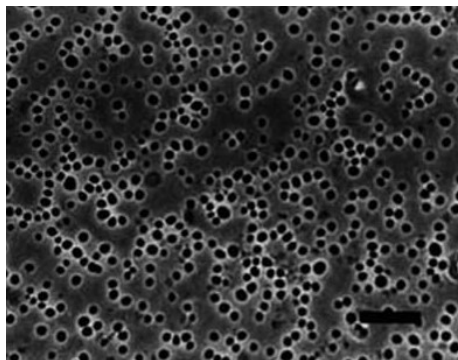
- Compatible with both aerobic and anaerobic systems
- Can be used together with other products of the BB series
- Enhances biomass growth
- Improves biomass quality
- Achieves consistent COD reduction
- Improves system efficiency



2.3. Biocultures

2.3.1 BBC-A-1 & BBC-AN-1

BBC is a specially isolated consortium of microorganisms developed for wastewater treatment, specifically for anaerobic biodegradation (BBC-AN-1) and aerobic biodegradation (BBC-A-1). It has a microbial count of 10^{10} to 10^{11} cfu/ml



Textile industry wastewater treatment 1200 m³/day



Dairy industry wastewater treatment 1800 m³/day



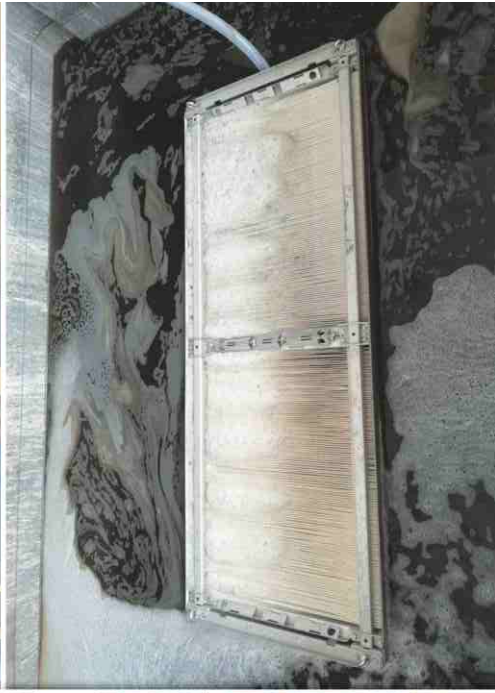
Sugar & distillery industry wastewater treatment 480 m³/day



Pharma industry wastewater treatment 250 m³/day



Chemical industry wastewater treatment 300 m³/day



Paper and pulp industry wastewater treatment 14000 m³/day



PET recycling wastewater treatment 1200 m³/day



Petro-chemical industry wastewater treatment 4800 m³/day



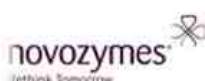
Solar Active Sludge Dryer



Textile industry wastewater treatment 1500 m³/day



Our Clientele

 DELTA GALIL —VIETNAM— SUBSIDIARY OF DELTA GALIL INDUSTRIES LTD.	 ELEGANT	 MAS CHANGE IS COURAGE	 DECOR™ Live beautiful
 GM LUXURY HOME DÉCOR	 TESSITURA MONTI INDIA	 Mafatlal®	 Jangam Value through values
 weavetex	 BEYAVISHNU CLOTHING PRIVATE LIMITED	 MANDHANA®	 UNICHEM LABORATORIES LIMITED
 A Member of Ramco Group	 PETVALUE A LEADER PARTNER OF PETROBRAS	 ALOK INDUSTRIES LIMITED INTERNATIONAL TEXTILES	 ASIA PACIFIC FIBERS Serving Textiles
 Recron Malaysia Sdn. Bhd. Member Reliance Group	 DC FURNISH NGS	 महानंद MSDAM	 श्री Shree Renuka Sugars Ltd.
 M/S B. G. CHITALE Chitale DAIRY	 INDORAMA Corporation	 ALKYL	 Cipla
 Amway™	 Dr.Reddy's	 torrent PHARMA	 ipca A dose of life
 TEVA	 safety-kleen. PROTECTION-CHOICES-PEOPLE MAKE GREEN WORK (Formerly known as Ziegler Green Oils)	 ARKEMA Performance Chemicals	 SUDARSHAN
 novozymes Let's think tomorrow	 THE SEKSARIA BISWAN SUGAR FACTORY LTD.	 बी एच ई एल BHEL	 AMALIE MOTOR OIL
 ecoblue renewing resources	 Godavari Water Limited	 LNJ DENİZ	 सैल SAIL



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