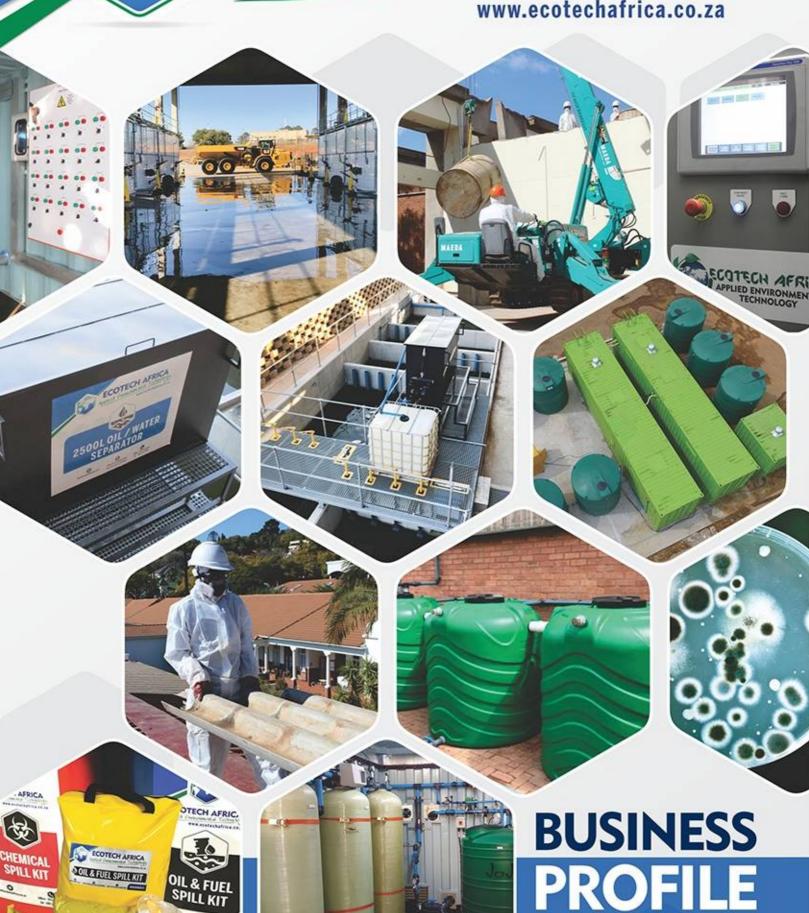


ECOTECH AFRICA

Applied Environmental Technology

www.ecotechafrica.co.za





ECOTECH AFRICA

SPECIALISTS IN COMPREHENSIVE ENVIRONMENTAL SOLUTIONS AND SERVICES

Both locally and in other African markets, we service residential, commercial and industrial markets. We are your one-stop service provider that delivers products and services of unmatched quality to various sectors, including mining, construction, agriculture, housing development, government, power generation and consulting engineering.

Why Choose Us

At Ecotech Africa we believe in the principal of designing, constructing, installing and commissioning systems and products that are sustainable, cost effective and that enhance

operations of our clients. We always use systems and products that are engineered solutions and assets to the operations of our clients. Happy clients are of the utmost importance to us as we believe that a satisfied client is a client for life. The professional and friendly team at **Ecotech Africa** will go the extra mile to deliver a product or service that at least matches your expectation.

Ecotech Africa Provides comprehensive environmental solutions to any concern that our clients have in various sectors from housing to industrial and mining. In the same vain, ensuring and assisting our clients to attain legal compliance while ensuring a sustainable operation.

As the custodians of this earth, we believe that our products and services will enhance the longevity of the environment our customers and ourselves operate in. The owners and management of Ecotech Africa all come from the environmental management field and realised the need for the services we offer in the local and international market.



Our Vision

To supply an excellent product and service to our customers and to build a brand that far exceeds any expectation.

Our Mission

To deliver products, services and projects of high quality, excellent value and innovative solutions to our customers.

"The team at Ecotech Africa rise to any challenge that they encounter and overcome it successfully to the benefit of the project."

{Robert Murray - Kantey & Templer}

"You guys did an exceptional job, and taking into account the short notice that I gave you, you and your team made all the effort to get the job done as quickly as possible without letting slip on quality."

{Ryan Groenewald }



Health & Safety

Zero Harm is a mutual objective for both management and employees. Therefore, good health and safety practices of all our people is extremely important and Occupational Health and Safety is an integral part of all stages of manufacturing and project execution. Because our employees have bought into this safety drive, they live accordingly and are entitled to refuse work in an unsafe environment.

ZERØHARM

Our Core Values

Safety: We pay careful consideration to the health and safety of our employees at the workplace and strive for **Zero Harm** always.

Customer Service Excellence: We are dedicated to satisfying customer needs and honouring commitments that we have made to them.

Integrity & Accountability: We value honesty, trustworthiness and high ethical standards and never compromising the truth. We accept responsibility for our actions. We make and support business decisions through experience and good judgment.

Innovation: We value innovative efforts, ideas and methods to continually improve our business processes and client relations.

Teamwork: We work as one team to achieve our corporate goals and to develop high quality solutions.

Community and Environment: We strive to help and improve the communities where we work and live. We are concerned about the environment and promote environmental awareness and stewardship.

Quality

Innovative Approaches – exceeding customer expectations through innovative approaches with a focus on our quality objectives. We strive to improve the level of service, promote a culture of continuous improvement in order to improve customer satisfaction levels by means of training and development of our

personnel and reviewing our quality objectives to ensure effectiveness and suitability.





BIOLOGICAL WASTE WATER TREATMENT

Biological treatments, which use organisms to break down organic substances in wastewater, are widely used around the world. Unlike other wastewater treatments methods, which use only mechanical or chemical processes, biological treatments include the use of bacteria, nematodes, or other small organisms.

Activated sludge process is a proven biological wastewater (sewage) treatment widely used for the treatment of both domestic and industrial wastewaters. It is particularly well suited for treating waste streams high in organic or biodegradable content. The Ecotech Africa WWTP is a system in which pre-treated sewage (i.e. having passed through primary treatment) is aerated to promote the growth of bacteria (cells) that gradually consume the organics in the sewage. The result is the development of cellsacclimated to the particular mix of substances present in the sewage and a significant consumption of the organic material. The effluent is a mixture of water with suspended cells and drastically reduced BOD content. This mixture is then passed through a clarifier (settling tank) where the solids (mostly cells, called sludge at this stage) are separated from the water. The system is commonly operated in continuous mode (as opposed to batch mode). This process involves confining naturally occurring bacteria at much higher concentration, in tanks. From here this bacteria, together with some protozoa and other microbes (collectively referred to as activated sludge) are treated in an anaerobic and an aerobic process. They are then returned to the anaerobic phase to eliminate sludge production and waste. The system is properly speaking an activated sludge system when a portion of the sludge (cells) collected from the bottom of the clarifier is returned to the anaerobic phase. The treated effluent can be utilized for various reclamation uses such as agriculture, irrigation, duct suppression or can be discharged to the environment as plants are designed to either comply to SASpecial Limits or General Discharge Limits dependant on requirements.

TECH AFRI

Typical Applications

- Land Development / Housing Development / Estates
- Mining & Industrial Sites
- Recreational Facilities (Camp Sites, Caravan Parks)
- ✓ Hotels & Lodges
- Schools & Educational Campuses
- Single Households & Agricultural Holdings
- Remote Mining, Contractors Camps, Construction sites
- Temporary
 Camps,
 Military basis and
 compounds

Advantages of the Ecotech Africa Systems

Pre-engineered, pre-fabricated structures result in lower cost

Unit is easily transported to the customer's project site (Econo, Inter, SST & Containerized Range)

Design allows for quick turnaround time for delivery and installation

System is simple to operate and requires low manpower, no need for permanent man power on site

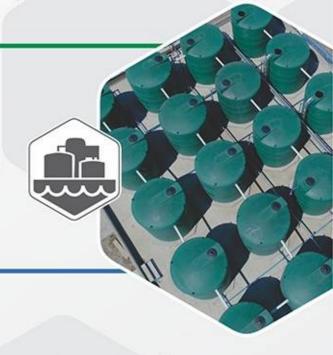


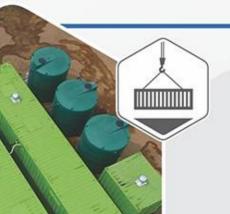
Econo Range

- Designed for low flow applications 1KI 10KI per day
- Installation above or below ground
- Ease of installation (No civil works required and can be done by owner or contractor)
- ✓ Most cost effective system for low flow applications

Inter Range

- Designed for intermediate flow applications 10KL and 400KL per day
- Effortless expansion can be done as plants are installed above ground
- Minimal civil works are required
- Most cost effective system in range for medium flow applications





Containerized Range

- Designed for intermediate flow applications, remote and off shore installations
- Effortless expansion can be done as plants are installed above ground
- Minimal civil works are required
- Easily transported and shipped

STT Range

- Designed for high flow applications 100KL and 3.5ML per day
- Effortless expansion can be done as plants are installed above ground
- Minimal civil works are required
- ✓ Most cost effective system for high flow applications





- Designed for high flow applications 100KL and 10ML per day
- Expansion of plant can be done by using common wall construction
- Gravity fed system



WATER **PURIFICATION & FILTRATION**

Whether fed from a municipal source, a borehole, a river, or the ocean, all water supplies contain dissolved mineral salts, microbiological contaminants and other materials. The amounts present determine the final analysis of the water, and ultimately whether the water is suitable for its intended application. In order to provide quality water for domestic and industrial use, the impurities that exceed acceptable levels have to be identified. Water treatment equipment should never be installed without a water analysis.



Pre-Treatment Processes

The objective of pre-treatment is to remove contaminants from raw water that will affect the stability and performance of the main treatment process and to remove contaminants that will affect performance of clients' main process.

Pre-Treatment Methods

Filtration

Two main types of filter media are employed - surface filter, a solid sieve which traps the solid particles, and a depth filter, a bed of granular material which retains the solid particles as it passes. The first type allows the solid particles, i.e. the residue, to be collected intact; the second type does not permit this. However, the second type is less prone to clogging due to the greater surface area where the particles can be trapped. Also, when the solid particles are very fine, it is often cheaper and easier to discard the contaminated granules than to clean the solid sieve. Filter media can be cleaned by rinsing with solvents or detergents. Alternatively, in engineering applications, such as water treatment plants, they may be cleaned by backwashing. Self-cleaning screen filters utilize point-of-suction backwashing to clean the screen without interrupting system flow.

Filtration Types

Surface Filtration

- Disc Filtration
- Bag Filters and Strainers
- Cartridge Filters

Depth Filtration

- Dual Media Filters
- Multi Media Filters
- Multi Grade Filters



Membrane Treatment Processes

Microfiltration usually serves as a pre-treatment for other separation processes such as ultrafiltration, and a post-treatment for granular media filtration. The typical particle size used for microfiltration ranges from about 0.1 to 10 μ m. In terms of approximate molecular weight these membranes can separate macromolecules generally less than 100,000 g/mol.

Ultra-filtration is a membrane filtration process similar to Reverse Osmosis, using hydrostatic pressure to force water through a semi-permeable membrane. Suspended solids and solutes of high molecular weight are retained in the so called retentate, while water and low molecular weight solutes pass through the membrane in the permeate. This separation process is used in industry and research for purifying and concentrating macromolecular solutions, especially protein solutions.

Reverse Osmosis is a complicated process which uses a membrane under pressure to separate relatively pure water (or other solvent) from a less pure solution. When two aqueous solutions of different concentrations are separated by a semi-permeable membrane, water passes through the membrane in the direction of the more concentrated solution as a result of osmotic pressure. If enough counter pressure is applied to the concentrated solution to overcome the osmotic pressure, the flow of water will be reversed.

Desalination is a well-established method of removing salts from water in order to produce process water, ultrapure or potable water. This is accomplished through using membranes (reverse osmosis and nanofiltration) and thermal processes. This mainly involves the production of freshwater from saltwater by introducing energy to pump the water through a semi-permeable membrane or a heat source for evaporation.

Disinfection

Disinfection vs Sterilization

- Disinfection (Large Scale)
- Selective destruction or inactivation of pathogenic organisms
- Sterilization (Small scale)
- Complete destruction of all organisms

Types of disinfection & sterilization

- Chlorination
- ✓ Ozone
- Ultra Violet Disinfection







WASH BAYS TURN KEY SOLUTIONS

When it comes to vehicle wash bays Ecotech Africa offers a turn-key solution including design, construction, installation and commissioning. Ecotech Africa can supply this as a standalone system or incorporate the effluent separation system, oil/water separation, water recycling andmany other key features to ensure legal compliance and hassle free wash system that works.

Ecotech Africa can constructs wash bays to suite any requirement and type of vehicle whether it be light vehicles, Heavy Vehicle Wash Systems, Transit Vehicles, Commercial Vehicles, Train Wash Systems, Mining Equipment and a variety of special equipment. Our systems can also be incorporated into existing structures and systems. The Ecotech Africa offering not only allows for washing of equipment and vehicles but also for the effluent separation process and recycling of the wash water.

All Wash Bays are constructed with Quality, Sustainability and Cost Effectiveness in mind. Wash Bays are specially designed or adapted to the client's requirements and vehicle types and the systems are suitably designed to wash an array of vehicles in one system.

Mobile / Modular Wash-Bay Systems

The Modular/Movable Wash Bay is a steel constructed system that is constructed on Ecotech Africa site and assembled on the client's premises. The modular wash system is a steel sectional panel platform with side screens; the platform is built at an angle to ensure drainage to the silt trap. This wash system can be offered from a basic part washing system, to 30t - 27m wash platform. The advantages of the system are no down time to the client during construction and a once off capital expenditure as the system can be disassembled and relocated to other operational areas. The system is modular thus can be expanded as client requirements change. The Modular wash-bay can be offered with total water recycling modules to recycle all wash water for re-washing.









Basic Civil Constructed Wash-Bay Systems

The standard wash bays are **civil installations** that are used for manual washing of vehicles. These systems are constructed for a wide range of applications from car washes to truck washes and can be supplied with additional components such as walk ways and monitors at various locations throughout the wash bay.

Fully Automated and Specialized Wash Systems

Mining

In the mining industry time is money, every minute your vehicles are idle you are not producing. Hand washing large equipment is time consuming especially if you do not have the right tools for the job. It often takes 4-6 hours to wash a 400 ton haul truck when washing manually. Implementing the correct design and equipment package we can significantly reduce this down time while also reducing ongoing maintenance costs.

Transit Rail

Ecotech Africa approach to Transit Rail wash systems is as innovative as the company itself. With global installations for Transit Rail, Interclean has become a leader in cleaning this type of vehicle. Whether catenary, third rail, diesel, or hybrid electric, we have the experience and knowledge to create the appropriate wash solution for the trains of today and tomorrow.

Fleet Wash

Simplicity. Efficiency. Results. The same things an operator would want from a fleet of trucks, Ecotech Africa delivers in its fleet wash systems. Automated systems remove the need for attendants, are low-maintenance, and require no detailing. Our fleet washes can handle over 7,000 trucks in a month, ensuring that your fleet presents a clean impression of the company over the road. A cleaner vehicle is easier to maintain and suffers less maintenance issues that arise from dirty trucks, such as corrosion.

Transit Bus

Ecotech Africa has multiple solutions for cleaning transit buses. Whether the customer is looking for completely touchless, or a brush wash system, we have the equipment and experience to assist in designing the appropriate wash system for the application.





Sediment Traps

Ecotech Africa constructs and designs sediment control systems to suite specific requirements. The development of a comprehensive sediment control plan is a vital element of an effective water management system. If left unattended, the deposition of silt in areas where adequate provision has not been made could result in a considerable cost to both the client and the environment. Sediment traps and basins provide a cost effective means to reduce the amount of suspended solids in surface runoff. Design criteria along with the level and regularity of maintenance required for sediment control measures are the key issues to their success. Dirty runoff from client workings (Workshops, wash-bays, plant & maintenance areas) contains residue that can cause silting up of drains, storm water systems and pollution control dams.

EFFLUENT SEPARATION SYSTEMS

When it comes to Effluent Separation Systems, Ecotech Africa employs various Effluent Separations methods as stand-alone systems or in conjunction with each other, depending on the specific requirements and effluent type.

Gravity Effluent Separation

The design is based upon the API (American Petroleum Industry) research over the past 35 years. It was found that with the Gravity Effluent Separation even without the use of any external separators and or skimmers the lowest count of hydrocarbon parts per million (ppm) will be achieved in the effluent discharged into the environment.

The Gravity Effluent Separation System is easily manageable, cost effective and sustainable. It will also assist the client with compliance to environmental standards and ISO 14001 regulations. Effluent discharged will be within the prescribed 2.5 parts per million and will comply with legislation.



Storm Water Effluent Management

Proven structural storm water runoff system designed to efficiently and effectively treat storm water by separating debris and trapping pollutants before they enter the waterways. All Eco Storm Water Systems, can be fabricated into multiple sizing combinations to fit a variety of applications and custom installations. An all-inclusive Eco Storm Water Systems treatment train guarantees economy of scale, precise multiple sizing combinations, greater installation flexibility, and superior pollutant removal efficiencies.

Eco Storm Water System products consist of two standard pre-cast manholes and the Eco Storm Water System unit. The two manholes allow the removal and storage of pollutants, while Eco Storm Water System directs the flow of water to provide the most efficient treatment possible. Eco Storm Water Systems are customized to fit your specific project requirements and the diameter and depth of both the primary and storage manholes may be tailored to suit any specific site conditions necessary. One of the advantages of the Eco Storm Water System is that its design offers unobstructed access for pollutant inspection and removal.

OIL/WATER SEPARATORS

Ecotech Africa's Oil/Water Separators feature a unique design based on Stoke's law that results in suspended solids settling at the bottom while oil rises to the top. This design promotes the easy and effective management of waste water. When we design our Oil/Water Separators, we take the following important factors into consideration:



Design Factors

- Design calculation to achieve optimal segregation
- Flow rate
- Design capacity
- Emulsifying agents

- Maintenance practices
- Suitability of oil water separation system to process
- Contaminants contained in the wastewater stream

Advantages of Ecotech Africa's Oil/Water Separators:



Addition to Denth

The additional depth on ECOTECH AFRICA separator allows for higher KPA pressure at the underflow level, thus increasing separation.



Increased Surface Are

The increased surface area of the polypropylene coalesces; increase the hydrocarbon probability to bind with the Polypropylene coalesces.



Uncreased Coalesces

Increased volume of coalesces allows for higher surface area for oil droplets to coalesce.



Little Flow

Higher flow rate allows for more effluent being handled.



Maintenance Recluce

Maintenance intervals are reduced due to increased capacity.



ASBESTOS ABATEMENT & ASSESSMENT SERVICES

Asbestos is the generic name for a number of naturally occurring silicate mineral fibres. Asbestos is a versatile product. Due to its ability to withstand heat, erosion and decay, and for its fire and water resistant properties, asbestos was widely used in building materials. Despite the use of all forms of asbestos being banned nationally, building materials containing asbestos are still prevalent in our community today. The most commonly found building materials that contain asbestos are asbestos cement products.



Safety and compliance are critical in the removal of asbestos containing waste and Ecotech Africa has experienced specialists in the process of asbestos removal and the regeneration of the location. Ecotech Africa offers a holistic service to clients to ensure regulatory compliance to our clients. Our services include:

- Asbestos Inventories
- Surveys
- Asbestos Management Plans
- Demolition & Removal
- Transportation
- ✓ Safe Disposal
- Training & Awareness

Ecotech Africa is registered with the department of labour as an Asbestos contractor for the safe removal of any asbestos containing waste. All our operational personnel are trained in the removal of asbestos and only registered and approved transporters and disposal sites are used.

Registered Asbestos Contractor











WASTE

Ecotech Africa is committed to building a greener future for South Africa. With a holistic approach to waste management and environmental responsibility, providing you with a complete management system for all your waste streams. Ecotech Africa offers a total Waste Management Service that not only includes waste disposal services, but has a strong focus on optimization and beneficiation through recycling of

Recycling & Waste Removal

Landfill Disposal Waste Management

Storage & Collection Waste Treatment

Waste Treatment

National Legislation dictates through the National Waste Management Act (Act 59 of 2008) in Charter 3 that the principle of Reduce, Re-Use, and Recycle must be the principle whereby any Waste Management Plan (WMP) is executed and implemented for any industry. It is with this in mind that Ecotech Africa drafted its business model with regards to Waste Management, Minimization and Beneficiation.

Services

various waste streams.

We offer a full range of services and products to satisfy all waste removal, handling and management requirements. Our focus is on the future and environmentally sustainable waste management and related services in the waste management. We are aligning ourselves to this hierarchy to promote recycling, reuse and reduction of waste. Ecotech Africa's unique business model is set on how we apply and manage our resources to provide the most efficient, cost effective and compliant service to suit our customers' specific waste requirements.

- ✓ Management Services
- Logistics

- Segregation, Recycling and Disposal of Waste
- ✓ Optimization and Beneficiation of Waste

Most Falloured Option Reduce Recycling Recycli

On-Site Waste Management

Our on site waste management service provides our clients with piece of mind that legislative requirement are met with regards to Waste, Environmental and Health & Safety Legislation and Regulations. Through effective on site waste management we reduce disposal of beneficial waste, establish an income for the client, ensure legal compliance and assist with the effective implementation of the clients integrated waste management plan. We supply our customer with detailed reports which can be supplied incorporated in the WMP.



OILVAC PRODUCTS

OILVAC is a range of oil and chemical absorbent products that offer rapid absorption & remediation of environment spills from hydrocarbon and chemicals, both on water and land. It is a field-proven industrial absorbent that is an economical, fast-acting solution to an environmental problem that could otherwise take years to resolve.

The **Ecotech Africa Range** consists of a choice of five different types of organic fibre absorbents, used for the absorption of hazardous environmental spill with the added advantage of bioremediation of contaminated soil.

Product Range



Organics Blend Absorbent

✓ ③ILVACSILVER

Organics Blend Absorbent (with added oil degrading microbes)

✓ ③ILVACGOLD

Coco Peat Absorbent

✓ ③ILVACPLATINUM

Peat Moss Absorbent



How does OilVac Work?

Ecotech Africa Absorbents comprises of a matrix of capillaries exposing a large surface area to the hydrocarbon or chemical spill. The high surface tension within these capillaries enables the organic fibre within the product range to hold between 5 to 14 times its own weights in liquids. This gives it the ability to absorb spills which have occurred over vast areas on land and water application.

It will not leach or discharge absorbed pollutants, making it clean and easy to handle. The Ecotech Africa range of products' high vapour suppression capacity reduces combustion vapours, eliminating the chance of explosion.

SPILL KITS

& ABSORBENTS



OIL & FUEL SPILL KITS

Oil & Fuel Spill Kits consist of a collection of items to be used in case of a spill, leak or other discharge of petroleum based liquids on hard surfaces.

Spill kits are developed for prompt response and easy clean-up of accidental hazardous spills. Available in a Wheelie Bin or Portable PVC Carry Bags, with absorbency from 20L to 220L.

(Higher absorbency spill kits available on request)



CHEMICAL

The chemical spill management range is available as booms, socks, pillows, absorbent pads or absorbent scatter.

You can buy these kits in the form of wheelie bins and carry bags. The active ingredient in the chemical spill management range is polypropylene.





BACTERIA & MICROBE TECHNOLOGIES

Our Bacteria is organic and natural, completely safe and pathogen free. It has a guaranteed shelf life of 2 years.

Ecotech Africa offers the widest range of Multi-strain bacterial products in Sub-Saharan Africa and Our products are extensively used in the agricultural, biochemical and petroleum industries and for the treatment of waste water and sewage.

Solid Biological Waste Treatment

With the use of our bacteria, the solid organic waste such as manure in livestock farming and municipal solid waste can quickly and effectively be broken down, drastically reducing bad odours. Our technology also minimises crusted over pits and settling of solids, which greatly enhances the viscosity when pumping the manure.

Petroleum Pollution

Ecotech Africa's bacteria effectively breaks down oil and other petroleum components into their base elements of water and carbon dioxide in a very short time resulting in large savings on rehabilitation of spills and other petroleum pollution.

Waste Water Treatment

Our biological waste water technology ensures a free flowing system with minimal blockages and odours and the potential re-use of treated water resulting in far less call outs and maintenance. By understanding what we needed we could go out and test different products on the market. We finally found what we consider to be by far the best bio augmentation product range on the market today. No other product offers the results, affordability and useability that the Microbelift product offers. Because of hundreds of case studies, real life trails and happy customers we are confident that we can offer solutions to your problems. Microbelift IND is a high count multi strain microbial product that deals efficiently and cost effectively with most organic issues. The product has proven itself for over 40 years in multiple industries and ensures that waste is handled and treated in a way that is safe for the environment. There is currently no other product that can offer what Microbelift IND offers - the most effective patented bio technology to ensure continuous positive results. Unlike the 2-6 strain bacterial products commonly found in the market, we offer 29 strains that can handle most of the biological processes found in a waste system.

Ecosystem Restoration

The natural restoration of health, quality, and ecological balance to polluted waterways such as manmade or natural bodies of water, retention and drainage ponds, rivers and streams, estuaries and municipal waterways is of great importance in every environment. Ecotech Africa supplies the core products offered by Ecological Laboratories, Inc. They have grown into the premier specialty microbial company in the world. We are proud to feature their products which are among the safest and most effective available anywhere.







MAINTENANCE VALUE ADDED SERVICE

Ecotech Africa offers maintenance on all plants installed by us and in some cases that of other suppliers where required. These maintenance services apply to:

- ✓ Biological Waste Water Treatment Systems
- ✓ Water Purification Plants
- Effluent Separation Systems
- ✓ Oil/Water Separators
- Wash Bays (Complete system and mechanical components)

ne es

Regular Servicing

Regular servicing of plants is crucial to ensure minimal failures of mechanical components and to ensure discharge effluent or water quality is of desired quality and complies to legislation. Dependent on system services and maintenance includes:

- ✓ Full and complete maintenance of system.
- Housekeeping of installation area & waste disposal (if required)
- Mechanical component maintenance and repair
- Full reporting and recommendations
- ✓ Water analysis (Chemical & Bacterial)
- Permanent operational staff placement (if required)

Maintenance is conducted by fully qualified and experienced technicians and personnel that are conversant in the operation of systems and can do fault finding and reporting on systems where required.







ECOTECH AFRICA MAJOR CLIENTS & ALLIANCES



































































"It is one thing to Imagine a Better World. It is another to Deliver it!"

www.ecotechafrica.co.za

SERVICES & PRODUCTS

WASH BAYS | EFFLUENT SEPARATION PROCESSES

WASTE MINIMIZATION AND OPTIMIZATION

ASBESTOS REMOVAL | WATER PURIFICATION AND TREATMENT

WASTE WATER TREATMENT PLANTS (BIOLOGICAL SEWAGE TREATMENT)







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Registered Asbestos Contractor

labour

Department:



EPUBLIC OF SOUTH AFRICA

