

### Concrete Solutions... ...to a Cleaner Environment







With over 97 years of experience and engineering know how, Rocla is the clear leader in Precast Concrete Products in Southern Africa.

From custom made concrete products and accessories through our full product range, we pride ourselves in absolute quality and superior service. Our technical team is always on the look-out for the latest technologies and innovations from all over the world.

Making us your preferred partner for all things precast, ensures that you always benefit from the Rocla difference, which is indeed, concrete.

With the local drive to ensure that South Africa meets international environmental standards for grease, oil and petrochemical separation from waste water, we decided to investigate how and where, we could add value to this process.

After extensive research into this field, we recognized the importance of state-of-the-art filters and filtration systems that have been tried and tested to conform to European Standards. We concluded our search for a partner with a European market leader called ecoTechnic, based in Austria, who are represented locally by Alltrap Engineering cc.



Alltrap Engineering began operations in South Africa in 1995 specifically involved with the manufacture of products of interest to companies concerned with the environment. Principally, the design and production of Petrol/Oil and Grease separators.

Aware of projects and companies demanding the highest levels of environmental consideration, such as the International Standards Organisation (ISO) 14001, Alltrap recognised the need to source alternatives that exceed the efficiency of locally available products. Alltrap secured the SA license to represent ecoTECHNIC GmbH of Austria and are now able to supply the best in class **ecoLine-b**, **ecoSep**, **ecoSorp** and **ecoStop** range of petrol and oil separators and accessories.



ecoTECHNIC GmbH & Co KG is an Austrian based company which was founded in 1996 as a sister company of Schlüsselbauer Maschinenbau GmbH & Co KG. Schlüsselbauer is an innovative company with a very strong focus on Research and Development. Schlüsselbauer's core business is designing and manufacturing fully automated plants and machinery for the brick and concrete prefabricated products industry. The main plant in Gaspoltshofen, Austria, with a workforce of around 160 people is complemented with branches and affiliates in the Czech Republic, Turkey and France. With approximately 25 mechanical and electrical engineers and Spc programmers working in the various engineering offices, all machinery and plants fabricated are designed and developed in-house.







### oilSep & greaseSep

#### **Grease Separators (Restaurant & Catering Industry)**

Rocla's self designed, circular Grease Separators offer superior separation of restaurant and catering industry grease from effluent by mixing the flow path of the effluent through the filter giving gravity more time to play its part in the separation process without the need for filters.

#### **Below ground Oil & Petrochemical Separators**

Rocla's 'eco' range of 'filtration' separators offer extended intervals between routine maintenance and low waste disposal costs. The units have also been designed with future, more stringent, standards in mind – allowing for tighter environmental discharge compliance guidelines to be met with little or no modifications to the system. The **ecoSep** and **ecoLine-b** units far exceed the strict European standards (DIN 1999 and EN 858) for performance (less than 5ppm of free oil) and also surpass US requirements. The outstanding independent testing certificates (available upon request) demonstrate the ability to provide clean water that exceeds today's environmental standards.

#### Accessible, Durable and Cost Effective Concrete Tanks

All basic elements of the **ecoSep** and **ecoLine-b** systems can be accessed from ground level. This minimizes confined entry requirements for routine cleaning and maintenance. Annual maintenance cost savings range from 30% to 50% over conventional separator systems. All internal stainless steel components can be factory installed in a Rocla precast concrete structure, which reduces installation time of the Oil/Water Separator. This provides substantial cost savings in the form of time, construction, materials and labour.

### One single oil droplet can contaminate one hundred litres of pure water – With ecotechnic, separation and spill control is safer than ever before.

Consider catastrophic consequences of an uncontrolled oil spill to our environment not to mention the liability, cost and fines for the remediation of site spills. **EcoLine-b, ecoSep** and/or **ecoStop** can help prevent this scenario from occurring through separation of oil/water and by detecting any sudden spills where the **ecoStop** mechanism would shut the drainage system, thus containing the spill on-site.









# ecoline « ecoSep

#### **The Working Principle**

These oil/water separators are designed to separate non-emulsified light liquids or low-water-soluble fluids with a specific gravity below 0.95 (gasoline, diesel, heating oils and other mineral oils) from effluent discharge. The two-step separation process; gravity separation and removal of small oil particles by coalescing media elements, produces high removal efficiencies.

Separators without an oil draw-off, such as the **ecoLine-b** unit, accumulate the separated light fluids on top of and in direct contact with the water surface, increasing the chance of emulsification at the oil/water interface. **EcoSep** permanently separates the oil from water by transferring this oil into its own self-contained tank, thereby allowing virtually no oil emulsion formations to develop. A standard version of **ecoSep** is equipped with a manual oil draw-off, a valve that can be opened and closed from ground level to collect oil in the independent oil recipient. As an option, the patented automatic oil draw-off device (ADD) can be installed (US-Patent No.: 5,622,619). This ADD constantly removes accumulated light fluids from the water surface and stores them in the oil recipient. The collected oil, which is free of any water, can be pumped through a standpipe for disposal. The costly disposal of large quantities of oil and water mixtures is then eliminated. Facilities that have the ADD actually are paid by waste oil companies that service their **ecoSep** systems.

#### Capacity

Both units offers a full range of below ground oil water separators from 50gpm (3l/s) to 320gpm (20l/s). Larger models of **ecoSep** are available upon request. Grit chambers shall be sized depending on the particular application.

#### Maintenance

The coalescing media cartridge has to be cleaned periodically. Since the maintenance intervals strongly depend on the particular application, check the condition of the filter element weekly during the first 60 days of operation. The filter media cartridge is very easy to lift out and reinstall and can be cleaned/rinsed with a garden hose. Recycle the wash-water to the separator. Do not expose the media to sunlight or UV-radiation! Remove sludge and oil from the system periodically.

**EcoLine** and **ecoSep** do not separate mechanically or chemically emulsified oils, vegetable oil or animal fat, solid grease. See product specific brochure for more information on installation, operating, maintenance and also any and all kind of influent that must NOT be treated with these separators. For additional installation, operating and maintenance details, please refer to the product specific manuals.

#### Temperature range of operation

5°C to 45°C







## ecoline « ecoSep

#### **Purification Process**

#### Purification Step 1: Grit Chamber (Tank 1)

The upstream grit chamber removes solids from the influent, thus ensuring unimpeded functioning of the oil separator itself. The grit trap is the first concrete tank of a standard two-tank design. The inlet apron guarantees an optimum usage of the retention time in the system. It works against the formation of so called "Eddy-currents" and thus enables maximum solids separation. The grit chamber also compensates for influent temperature fluctuations, influent oil concentration influxes and initializes the separation of light fluids. A perforated 90° outlet tube inhibits floating solids from entering the separation chamber.

#### Purification Step 2: Gravity Separation (Tank 2)

The water is then admitted to the gravity separator tank. In the **ecoSep** unit, this water passes through a floatactuated shut-off valve **[ecoStop]** at the inlet, whilst the **ecoLine-b** unit has unrestricted access to this chamber. Then, being lighter than water, some of the oil floats on the surface.

#### Purification Step 3: Coalescing Media (Tank 2)

In the residual oil media, fine droplets that are too small to be separated by gravity alone are accumulated into larger drops that will then rise to the surface. This enhanced coalescing media is made of durable reticular, (i.e. "net-like") soft, polyurethane foam. The outlet structure features a venting pipe that provides an effluent sampling port. The separated water that leaves has a residual contamination of free petroleum content of less than 5 mg/liter. This coalescing media filter is the same for both the **ecoSep** and **ecoLine-b** units.

#### **Spill Control**

The **ecoLine-b** has an automatic shut-off valve that closes the outlet pipe when the maximum oil storage capacity is reached. The **ecoSep** has an **ecoStop** automatic shut-off valve that stops the flow from the grit chamber, either when the maximum oil storage capacity is reached or when a specified liquid level in the separation chamber is exceeded. In its closed position, this valve is tight up to 0,5 bar (5m-water column) of total dynamic head pressure. This makes the **ecoSep** the only separation system available that provides maximum security for the facility owner against unexpected, unpredictable and catastrophic petroleum spills.

#### Material

Stainless Steel Grade 304 and high grade polyethylene.



Oil Separator Capacity	Tank Description	(ID) Tank Diameter	Tank Depth	Cover Slab (mm)		Reducer Slab (mm)		lid (mm)	Total	Available	Static Level	Fluctuation	Oil Volume	Approx
				From	То	From	То		Volume	Volume	Volume	Volume		Mass (t)
ecoLine NGo3	Grit Tank	1.25 M	1.49 m	1 250	560			560	1 703 <i>l</i>	1 356 <i>l</i>	1 105 mm	<b>347</b> ℓ		2.09 ton
ecoLine NGo3	Separator	1.25 M	1.49 m	1 250	560			560	1 703ℓ	1 295ℓ	1 105 mm	<b>409</b> ℓ	288 <i>l</i>	2.09 ton
ecoLine NGo6	Grit Tank	1.52 M	1.53 m	1 500	560			560	2 567ℓ	2 051 <i>l</i>	1 126 mm	<b>516</b> <i>ℓ</i>		3.21 ton
ecoLine NGo6	1.52 m	1.80 m	1.55 m	1 800	1 000	1 000	560	560	3 562ℓ	2 711 <i>l</i>	1 062 mm	<b>8</b> 50ℓ	<b>415</b> ℓ	4.86 ton
ecoLine NG10	Grit Tank	1.52 m	1.81 m	1 500	560			560	3 o68ℓ	2 478ℓ	1 360 mm	<b>590</b> ℓ		3.51 ton
ecoLine NG10	1.98 m	1.80 m	1.83 m	1 800	1 000	1 000	560	560	<b>4 289</b> ℓ	3 462ℓ	1 306 mm	827 <i>l</i>	<b>415</b> ℓ	5.29 ton
ecoLine NG15	Grit Tank	1.80 m	2.41 m	1 800	560			560	5 760 <i>l</i>	4 833ℓ	1 893 mm	927ℓ		5.94 ton
ecoLine NG15	Separator	1.80 m	2.41 m	1 800	1 000	1 000	560	560	5 760 <i>l</i>	4 833ℓ	1 843 mm	<b>927</b> ℓ	<b>415</b> ℓ	6.14 ton
ecoLine NG20	Grit Tank	1.95 m	2.40 m	1 950	560			560	6 645ℓ	5 677ℓ	1 901 mm	<b>968</b> ℓ		7.46 ton
ecoLine NG20	Separator	1.95 m	2.40 m	1 950	1 000	1 000	560	560	6 645ℓ	5 677ℓ	1 851 mm	<b>968</b> ℓ	<b>449</b> ℓ	7.51 ton
ecoSorp 160GPM	Grit Tank	1.25 m	1.26 m	1 250	750	750	560	560	1 <b>421</b> ℓ	1 102 <i>l</i>	858 mm	<b>319</b> ℓ		1.93 ton
ecoSorp 160GPM	Separator	1.25 m	1.26 m	1 250	750	750	560	560	1 421 <i>l</i>	1 102 <i>l</i>	858 mm	<b>319</b> ℓ		1.93 ton
ecoSep NGo3	Grit Tank	1.52 m	1.81 m	1 500	560			560	3 o68ℓ	2 246ℓ	1 233 mm	<b>822</b> ℓ		3.08 ton
ecoSep NGo3	Separator	1.52 m	1.81 m	1 500	560			560	3 o68ℓ	<b>2 164</b> ℓ	1 133 mm	<b>904</b> ℓ	<b>460</b> ℓ	3.08 ton
ecoSep NG10	Grit Tank	1.52 m	2.35 m	1 500	560			560	4 o48ℓ	2 988ℓ	1 640 mm	1 060 <i>l</i>		3.66 ton
ecoSep NG10	Separator	1.80 m	2.41 M	1 800	1 000	1 000	560	560	5 760 <i>l</i>	4 136 <i>l</i>	1 540 mm	1 624 <i>l</i>	<b>654</b> ℓ	6.09 ton
ecoSep NG20	Grit Tank	1.95 m	2.40 m	1 950	560			560	6645 <i>l</i>	5 600 <i>ℓ</i>	1 875 mm	1 045 <i>l</i>		7.46 ton
ecoSep NG20	Separator	2.60 m	2.50 m	2 600	1 000	1 000	560	560	12 211 <i>l</i>	9 822ℓ	1 850 mm	2 389 <i>l</i>	989 <i>l</i>	11.34 ton
ecoRain Volume	Inlet Tank	1.25 m	1.26 m	1 250	750	750	560	560	1 421 <i>l</i>	1 022 <i>ℓ</i>				1.93 ton
ecoRain Volume	Inlet Tank	1.00 M	2.53 m	1 250	560			560	1 927 <i>l</i>	483 <i>l</i>				2.13 ton

Oil & Petrochemical contaminant CANNOT be effectively separated by means of gravity separation alone which is why Rocla has launched this range of OIL Separators that are fitted with a coalescing media filter that separates the oil & petrochemical particles from the effluent.

It is also imperative to note that these Oil Separators have been designed to :

- Exceed the strict European standards (DIN 1999 and EN 858) for performance, and
- Separate non-emulsified light liquids or low water-soluble fluids with a specific gravity below 0.95 (gasoline, diesel, heating oils and other mineral oils) from effluent discharge.
- EcoLine and ecoSep **DO NOT** separate mechanically or chemically emulsified oils, vegetable oil or animal fat, solid grease.

These filters must **NOT** be used to treat the following kinds of influent:

- More domestic sewage than the unit has been designed to handle
- Substances which could impede proper functioning (large quantities of suspended particles, etc.)
- Non Biodegradable detergents and cleaning agents that form stable emulsions
- Wastewater inflows that are still influenced by pump, agitator or vibrator movements
- Wastewater inflows not having PH values of between 6.0 and 8.0
- Wastewater containing Chlorides

If your current project is not a high risk operation where large quantities of oil/petrol are stored on site, you should be able to specify the ecoLine unit as opposed to the ecoSep unit which is more suited to petrol stations or transformer installations.









# ecoStop®

#### With tough environmental legislation - ecoStop meets tomorrow's standards today

The **ecoStop** Spill Control System provides the safest and most cost-effective method to control spills at petroleum storage or fuelling facilities. The costs associated with an oil spill are high, not just for our environment but also for your company or client. A spill situation shuts down **ecoStop's** closure valve, preventing the discharge of free oil to municipal sewers or direct discharge outfalls.

**EcoStop** retains the spill on site where it can be contained either below grade (i.e. an underground storage tank or a large diameter pipe) or in an above grade, bunded area. The capacities of this upstream storage reservoir should be large enough to accommodate typical amounts of a tank truck oil-spill (with an additional capacity, safety factor). The **EcoStop** detects spills automatically and eliminates the most common failure in traditional spill control systems, human error.

#### Installation

The system is installed in-line and downstream from any segregated petroleum containment drainage area treating runoff. **EcoStop** comes pre-installed in a standard precast concrete hole or in an **EcoSep** Oil/Water Separator.

#### **Field of Application**

Any facility or site, where the potential for a petroleum spill exists, such as gasoline stations and other fuelling facilities, electrical transformers, oil storage areas, transportation fuelling systems etc.



#### EcoSorp is the last element of a purification chain

**EcoSorp** is a hydrocarbon adsorbing system, that removes small amounts of free, physically emulsified and dissolved oil by adsorption. During this process, oil particles that are too small to be separated by gravity, are physicall bound to an oleophilic material. **EcoSorp** is usually used to further increase purification efficiency downstream to other mechanical pre-purification such as **EcoSorp** or ecoLine filter. This water can then be directly discharged as residual hydrocarbon concentrations are below 0.1 ppm.

The material used for the filter cartridges can adsorb 9 to 10 times its own weight of hydrocarbons and petroleum byproducts. Atypical **EcoSorp** system consists of 2 cartridges comprising 3 filter bags (0.9kg) each. This equates to a mass of 5.4kg which allows for 48.6kg of absorbed products.







### greaseSep

Designed only for separation of restaurant and catering industry grease, our in-house designed Grease Separator, placed outside, below ground, with manhole access for cleaning, offers superior separation to normal square/rectangular type products by:

- Utilising the full length of the circumference of a circle to increase initial flow path distance, and
- Specifically designed inlet & outlet components to reduce flow velocities

In order to adhere to the recently incorporated European Code for separators, we recommend coating all the inside surfaces with a sealant that has been tested to the required acid levels. Contact Rocla for a recommended supplier.

GS Rated Capacity	Inlet Tank (ID)	Outlet Tank (ID)	Outlet Tank Depth	Cover Slab (mm)		Lid	Access	Total	Available	Static Level	Fluctuation	Flow Rate	Maga (t)
				From	То	(mm)	openings	Volume	Volume	Volume	Volume	retention)	Mass (l)
<b>500</b> ℓ	1.00 M	0.53 m	1.24 m	1 000	560	560	1	821 <i>l</i>	681 <i>l</i>	583 <i>l</i>	<b>98</b> ℓ	27ℓ/min	1.47 ton
1 000 <i>l</i>	1.25 m	0.61 m	1.23 M	1 250	560	560	1	1 274 <i>l</i>	1 089 <i>l</i>	934 <sup>ℓ</sup>	<b>155</b> ℓ	44ℓ/min	2.21 ton
1 500 <i>l</i>	1.25 m	0.75 m	1.50 m	1 250	560	560	1	1 <b>520</b> ℓ	1 306 <i>l</i>	1 118 <i>l</i>	<b>188</b> ℓ	52ℓ/min	2.64 ton
2 000 <i>l</i>	1.52 m	0.75 m	1.50 m	1 500	560	560	2	2 292 <i>l</i>	2 019 <i>l</i>	1 726ℓ	<b>293</b> ℓ	81ℓ/min	3.77 ton
3 000 <i>l</i>	1.83 m	1.00 M	1.50 m	1 800	560	560	2	3 220ℓ	2 892 <i>l</i>	2 481 <i>l</i>	<b>411</b> <i>l</i>	116ℓ/min	5.51 ton
3 500 <i>l</i>	1.98 m	1.00 M	1.50 m	1 950	560	560	2	3 819ℓ	3 434ℓ	2 938 <i>l</i>	<b>496</b> ℓ	137ℓ/min	6.68 ton



SECTION SHOWING



TRANSFER PIPE







# ecoStorm

### Rocla presents ecoStorm plus, an affordable storm-water filtration system designed to remove sediments, heavy metals and nutrients.

Surface water runoff contains significant concentrations of heavy metals and other soluble pollutants. Structural storm-water treatment systems are effective in removing sediments, but do not remove solubles such as heavy metals and nutrients (phosphates and nitrates).

By using various physical and chemical processes, the **ecoStorm plus** Filtration System effectively AND affordably removes BOTH solids and dissolved substances [Total Suspended Solids removal >95%], including:

- Heavy metals zinc [>80%], copper [>90%], lead [>95%], cadmium, chromium, nickel
- Hydrocarbons [>98%] mineral oils, polycyclic aromatic hydrocarbons
- Nutrients such as phosphorous [>70%] and nitrates

Why is **ecoStorm plus** the most cost effective storm-water filtration system on the market that is setting new standards for storm-water regulatory requirements?

- In addition to filtration, the system utilizes chemical transformation, precipitation and sorption (ion exchange) to remove a variety of pollutants (heavy metals, hydrocarbons) from storm-water
- More effective and affordable than conventional filters utilizing stainless steel, activated carbon or zeolithes
- Upstream sediment removal combined with self-cleaning filters reduces maintenance intervals and costs
- Easy installation saves time and money single-structure design comes pre-assembled to jobsite, reducing footprint and excavation costs
- · Has undergone extensive laboratory and field-testing with proven results
- Patented concrete filters can be modified to accommodate various applications and flow-rates

#### Designed to be ideal for new construction or retrofit applications:

Parking lots, industrial manufacturing facilities, commercial / retail developments, municipal / residential drainage improvements, transportation / maintenance facilities, water quality improvement of ponds & lakes for

- Treatment of run-off from metal roofs (Copper, Zinc and others)
- Surface water runoff from streets, highways and parking lots
- Upstream to a rainwater harvesting tank
- Storm-water runoff from surface areas generating less than 12l/s treatment flow rate







## ecoStorm

#### ecoStorm plus Treatment Process

All **ecoStorm plus** units are equipped with a central overflow and maintenance pipe to handle peak flow rates and allow access to the sediment storage chamber. While **ecoStorm plus** is typically designed for gravity treatment of storm-water drainage, it has the flexibility to accommodate other methods of pollutant delivery. The patented concrete filters can be modified to accommodate various applications and flow-rates.



#### Sedimentation

Sediments are removed from storm-water by gravitation and trapped in the base section of the ecoStorm plus unit. A small amount of sediment will accumulate temporarily on the lower surface of the filter (Plus-Filter). The design of the ecoStorm plus system allows self cleaning.



#### Filtration

Vertical filtration in the pollution control pit an constant immersion in water of the Plus-Filter prevents formation of a film on the lower side of the filter, which might otherwise lead to clogging.



#### Adsorption

Pollutants including hydrocarbons and dissolved heavy metals, are adsorbed by the modified porous concrete surface.



#### **Chemical precipitation**

The Plus-Filter buffers the pH of the storm-water, which is typically acidic, hence promoting precipitation and accumulation of dissolved substances. The fine pores of the filter allow water to seep slowly through the media providing greater opportunity for interaction between water and the alkaline composition of the filter.

#### Specifically designed for low-cost and easy maintenance.

The frequency of sediment removal and filter replacement are dependent on site conditions and pollutant loads. Sediment, which may contain heavy metals removed during the cleaning process, is removed either manually or by mechanical suction. Permeable concrete filters (Plus-Filter) in the Pollution Control Pit are self-cleaning and are expected to remain effective for long periods (up to 2 years) without replacement. However, new filters should be considered at more frequent intervals where pollution loads are heavy. Replacing filters is an easy and inexpensive process.



#### **ROCLA NATIONWIDE**

Positioned to serve your needs, Rocla's 11 factories are strategically located throughout South Africa's nine provinces and in Namibia and Botswana.

South Africa and offshore markets are cost effectively supplied by road, rail and sea.

Made by modern processes, supervised in accordance with SABS Quality Management System, Rocla's factories make products that proudly carry the SABS Mark of Approval.

#### HEAD OFFICE, PO Box 92, Roodepoort 1725, Tel: (011) 670 7600, Fax: (011) 472 5754

- Blackheath: Tel: (021) 905 1270, Fax: (021) 905 2913
- De Aar: Tel (053) 631 3601/2, Fax: (053) 631 3351
- Gaborone, Kwena Rocla: Tel: (09267) 390 4032, Fax: (09267) 390 7160
- Nelspruit: Tel: (087) 354 9202, Fax: (086) 675 9524
- Newcastle: Tel: (034) 375 7848/9, Fax: (034) 375 6941
- New Germany: Tel: (031) 705 1525, Fax: (031) 705 1773
- Polokwane: Tel: (015) 293 1857/8, Fax: (015) 293 2821
- Port Elizabeth: Tel: (041) 486 1462, Fax: (041) 486 2835
- Roodepoort: Tel: (011) 670 7600, Fax: (011) 672 2464
- Stilfontein Depot: Tel: (018) 484 6234, Fax: (018) 484 2983
- Virginia: Tel: (087) 354 8688, Fax: (086) 646 6291
- Windhoek, Rocla Pipes: Tel: (0926461) 26 3128, Fax: (0926461) 21 5149

Email: info@rocla.co.za Web: www.rocla.co.za







