



# Appendix 6 SPEL Puraceptor

**SPEL**

PURACEPTOR



# Pollution Prevention

Stormwater Treatment & Hydrocarbon Capture

# Petrol Stations

Australia

**SPEL** STORMWATER SOLUTIONS

# Standards & Guidelines for Petrol Station Stormwater Pollution Control

There is no Australian Standard for oil/water separators.

There are only guidelines for hydrocarbon discharge limits for stormwater discharge.

All State and territory regulating environmental authorities (or EPA) have guidelines with varying terminology stating that hydrocarbons are not to be visual (10ppm) in stormwater and receiving waters.

## European Standard (oil and petrol separators)

In the absence of an Australian Standard, the European British Standard 858.1 applies when compliance is the regulating issue.

It is the world's most stringent standard for hydrocarbons separation for the use of oil/petrol separators in surface water drainage systems. Prevents the emission of petrol odours.

## Australian Runoff Quality

The Australian Runoff Quality A Guide to Water Sensitive Urban Design (Engineers Australia) ISBN 0 85825 852 8 Chapter 9 'Hydrocarbon Management' refers to The Standard and the European Agency UK Oil Separator Selection and Design for petrol stations.



Picture shows an under-sized canopy with fuel pumps outside the canopy dripline



## Non-Compliant Sites

Petrol stations with the following defects.

- Canopy drip line that does not allow for the 10 degree inset
- Fuel hose line that reaches outside the drip line
- Fuel bowsers that have no canopy
- Defective Oil/Water plate separator (Sewer connected)



Picture shows a common site at petrol stations - uncovered fuel pumps.



Picture shows a defective forecourt design with oils and fuels discharging directly to the street drain.



Unseemly & highly visible hydrocarbons polluting the stormwater. The concentration in the picture is in excess of 100ppm

## Solution for Non-Compliant Petrol Stations

**SPEL Puraceptor Class 1** stormwater treatment system is a solution for the treatment, capture and retention of hydrocarbons off petrol stations.

**SPEL Puraceptor Class 1** can rationalize the existing use of service stations in conformity with the applicable environmental guidelines and put in place ongoing operational measures to prevent the likelihood of contamination in the case of an unforeseen future event.

**SPEL's Puraceptor Class 1** oil/water separator is connected to the stormwater [provides the site with the highest degree of environmental protection; - a protection that complies with the councils, and the EPA's guidelines.]



Petrol forecourt and surrounds at a busy metropolitan petrol station rendered compliant. The catchment consists of a grated drain encompassing the complete perimeter of the under-sized canopy. Surface water and forecourt runoff drains to the Puraceptor located under the two trafficable covers in the foreground.

## Puraceptor Benefits

- Full retention Class 1 treatment oil/water separator. It treats all liquid. There is no bypass.
- Complies with federal and state government regulating environmental guidelines for water quality.
- University tested and certified to independent European Standard EN BS 858.1 for the capture and retention of hydrocarbons with a discharge quality of no visible trace from a tested inflow concentration of 5,000ppm.
- Capture and contain oil/fuel spillages.
- Can be sized to capture and contain a spill from a refuelling tanker and prevent discharge to stormwater.
- Passive gravity function ensuring treatment is continuous.
- Equipped with an intrinsically safe oil alert probe providing regular detection for oil build-up. Set to alarm when oil hydrocarbons attain 10% of the chamber's volume.
- Oil alert probe enables 'self-monitoring', suitable for unmanned and remote locations.
- Equipped with a flame trap ensuring fire water is extinguished.
- Equipped with a vapour trap preventing vapours from discharging and preventing the emission of odours.
- Water tight structure
- Minimum 50 years life span.
- Low frequency and low cost maintenance
- Operations & Maintenance manual with a ledger for accurate recording of maintenance operations.
- Maintenance performed from ground level; no entering of tank is required, satisfying O.H. & S. requirements.

## Puraceptor Certification

### Australian Independent Tests

The Puraceptor has been independently tested at Australia's pre-eminent hydraulics research facility, the University of South Australia (UNISA), and at the UK's leading hydraulics research faculty HR Wallingford.

- NATA analysis of the tests shows a water quality of 'no visible trace' of hydrocarbons from an inflow concentration of 5,000ppm.

### In-Situ Testing

NATA analysis of Puraceptors operating at similar applications in Australia reveal 'no detection' of hydrocarbons from a captured concentration of 8,000ppm.

## Council Approvals

The increasing awareness by councils of the superior European Standard has prompted many to review their current procedures and in only the past eighteen months over sixty councils have approved SPEL for service stations and similar applications with units' already operational in excess of forty sites.

**Independently tested for reducing the average annual loads:**

- ✓ 97% total suspended solids (TSS)
- ✓ 100% > 5mm gross pollutant solids (GP)
- ✓ 99.9% light liquids (TPH)  
(certified discharge quality of 5PPM or less, European standard BSEN 858.1 2006)
- ✓ >45% total phosphorous
- ✓ >45% total nitrogen
- ✓ >90% heavy metals



## MAINTENANCE

- Designed for high performance and low maintenance over a long life span
- Visible oils (TPH) are skimmed from the surface of the water level
- Easy and safe to access and clean, with access shafts positioned on all chambers.
- No entering of the unit is required
- Not mandatory for the unit to be cleaned every 3 months.
- Only oils, sediment and gross pollutants need to be removed. All stormwater does not require removal.
- The cylindrical design ensures sediment collects easily on the floor of the chambers effecting easy, quick removal. There are no square corners or unreachable cavities and recesses.
- Waste is removed by a vacuum loading truck. (Suction truck)



Stormwater discharge quality is < 1.86 mg/l hydrocarbon content exceeding the Environmental Protection Agency (E.P.A.) requirements of 10mg/l hydrocarbon content.

Test sampling access: Field test discharged samples are taken from sampling point and analysed by NATA accredited laboratories.



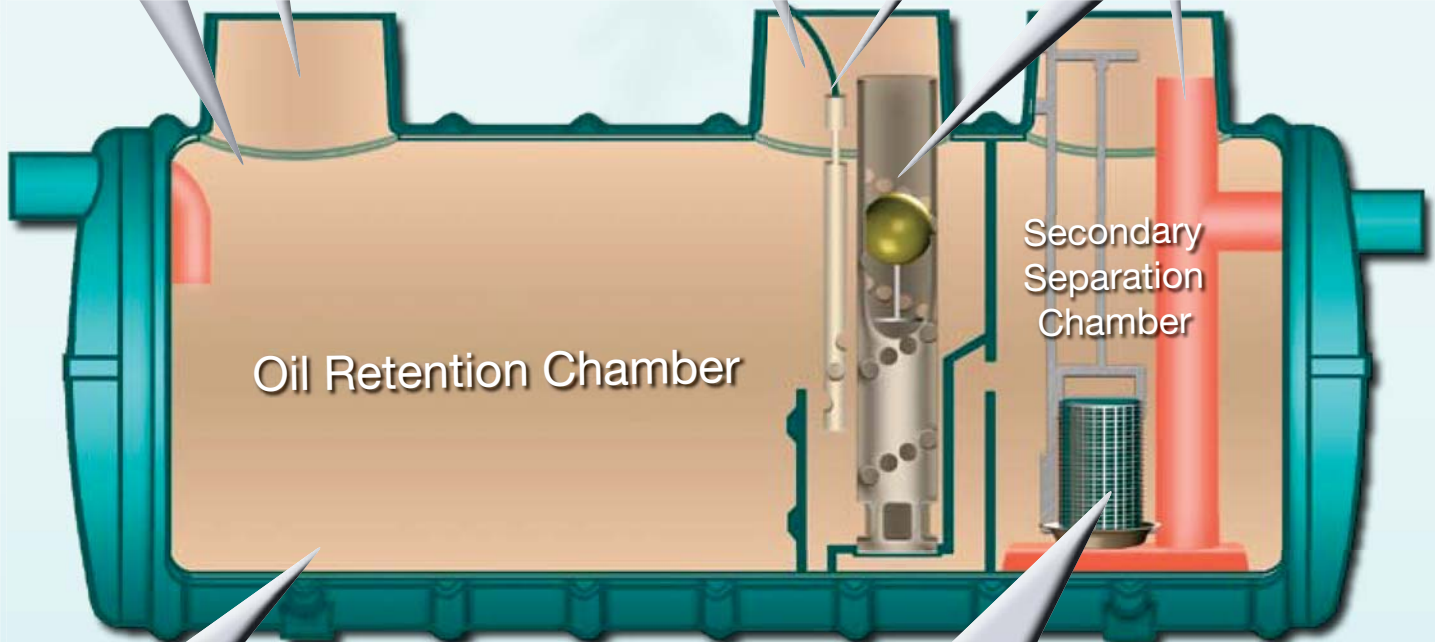
The probe is freely suspended in the probe protection tube in the separator at the correct level. When the oil-layer or depth of hydrocarbons reaches the predetermined level, the top of the probe will be immersed in the oil, breaking the circuit and activating the alarm. It is intrinsically 'fail-safe' system providing complete assurance that is operative. If a fault occurs it will be signaled immediately.



SPEL® PURACEPTOR tanks contain an immersed inlet dip pipe to extinguish flames and prevent inflammable vapours from passing through to the drainage system. Complies with Section 6.3.4 of BS EN 858.1.2006. SPEL PURACEPTOR can withstand temperatures of up to 140°C.



The AUTOMATIC CLOSURE DEVICE (A.C.D.) is a precisely engineered device comprising a water-buoyant ball that is sensitive to any change in the water density as a consequence of light liquids build up, thereby automatically activating a process of depressing the A.C.D. to SHUT OFF the separator, preventing pollutants from discharging to drains and waterways.



Oil Retention Chamber

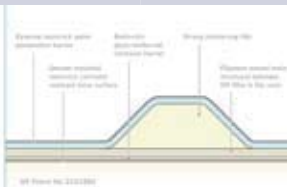
Secondary Separation Chamber

SPEL® PURACEPTOR units are glass reinforced plastic vessels made by the technical advanced chop hoop filament winding process (patented) producing circumferential and longitudinal strength complying with AS 2634-1983 for tank design.



### Laminate construction

- Tank shell designed in accordance with AS2634-1983 (SA 910)
- Fiberglass second shells are lightweight, but have great strength and durability and carry a 25 year warranty.
- Life expectancy in excess of 50 years.
- Smooth, high gloss, corrosion resistant, non-porous internal surface.
- External 'flow coat' water penetration barrier.



SPEL PURACEPTOR Class 1 separators incorporate coalescer units. They consist of a quality stainless steel mesh container with an adjustable handle and high volume reticulated foam insert.

The coalescer unit is mounted in the second chamber, providing a coalescence process for the separation of smaller globules of light liquid pollutants before final discharge to stormwater.



# SPEL PURACEPTOR™

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