SANERGRID® **Filter & Containment Solutions**

ges group

PROVIDING THE BEST SOLUTIONS

BUILDING POWERFUL PARTNERSHIPS

Highly Effective Hydrocarbon Filters and Retention Tanks

www.ges-group.com

Introduction to Hydrocarbons

Many industrial devices, such as transformers, contain several thousand litres of transformer oil in their internal cooling or insulation systems. These oils belong to the hydrocarbon classification, and may cause severe soil or water pollution in the event of a leak or spill.

To mitigate this pollution risk, industrial equipment must be paired with retention equipment of a volume at least equal to the volume of hydrocarbons the equipment contains (the Full Retention Principle). The European standard EN 61936-1 (for transformers) requires a watertight retention able of containing 100% of the oil volume contained in the transformer.

Additional protection such as an extinguishing cover, or suffocating gratings, are recommended to avoid slippery stones or pebbles below the transformer in the concrete retention pit.

Additionally, equipment installed outdoors is subject to rainwater that can fill the primary retention tank. To overcome the rainwater and/or oil leak overflow risk, the tank must be equipped with a system that filters and continuously discharges rainwater, while retaining hydrocarbons within a secondary retention device. The hydrocarbon contamination limit is no more than 5ppm hydrocarbon in discharged water (EN 858-1).

The Sanergrid SPI® Solution

Sanergrid's SPI® hydrocarbon filters allow you to drain rainwater that is potentially contaminated with hydrocarbons in a simple and efficient way, guaranteeing a safe concentration rate in the output rainwater.

The standard SPI® range is composed of different filtration cartridges capable of pumping from 3 litres per minute, up to 150 litres per minute, and they can also accommodate for bespoke designs to suit your application.

PETRO PIPE®

PETRO PIT®

PETRO BARRIER™

PETRO PLUG®

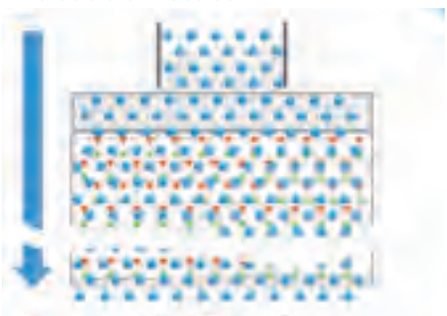
Put simply, the unique Sanergrid® SPI® Filters allow rainwater to drain, while containing contaminants.

How Do SPI® Filters work?

Initial State

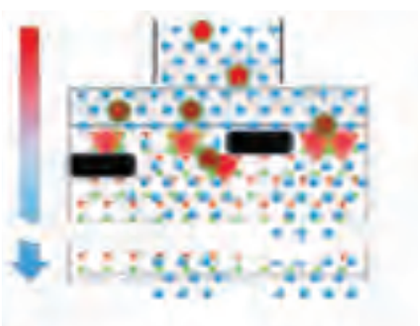
Sanergrid SPI ® Filters are quick to install, and are available in a range of capacities suitable for a range of applications.

Evacuation State



In the presence of water, the SPI® Filter allows water molecules to flow freely through the filter. The higher the pressure is in the filter input, the higher the rate of outflow is. Dust, mud, and impurities in water can affect the flowrate, which is why *pre-filtration* is important.

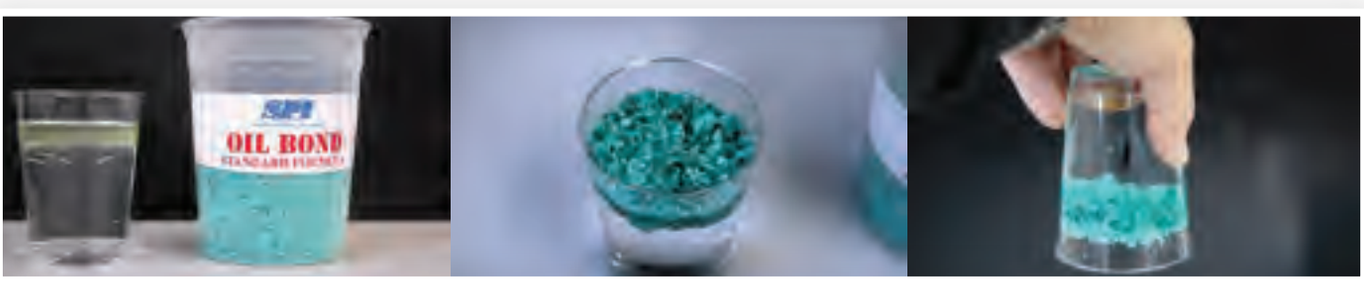
Filtration State



In the event that hydrocarbon molecules enter the filter, the active media captures and solidifies any contaminant, preventing further flow. Media that is not in contact with hydrocarbons is not activated, therefore clean water molecules can still freely pass. With the solidified hydrocarbons reducing the amount of free space for water to flow, the outflow decreases according to the amount of hydrocarbons trapped in the filter.

Sealing State

In the event that there is a significant flow of hydrocarbons into the filter, or a quantity equal to the saturation capacity of the filter, the active media will solidify and there will be no space available for the free movement of water molecules. At this stage, human intervention is necessary - if an oil leak is responsible for sealing the filter, the leak must be identified and sealed, and the filter replaced.

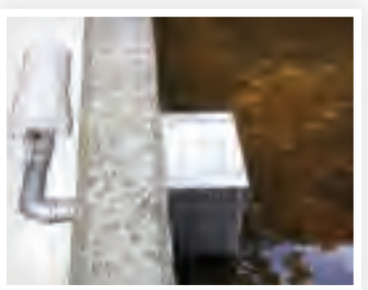


What is Pre-Filtration?

The filters in SPI® products are designed to react with hydrocarbons. However, they are sensitive to mud and impurities in water, which can considerably lower their solidification capacity and rainwater outflow.

Pre-filtration is an absolute necessity for all SPI® filters, which should be checked and cleaned as often as the installation requires. Consisting of a set of grates, and foams of different mesh sizes, its purpose is to protect the SPI® filter, and block impurities in rainwater from getting to the filter, preventing damage.

Pre-filtration can be through a cartridge, for example in a PETRO PIT® style filter, or it can be external and placed in the retention tank, for example in the PETRO PIPE®, PETRO PLUG®, and PETRO BARRIER® style filters. When positioned externally, the pre-filter is most effective as it is at the source of the impurities, guaranteeing a longer filter lifespan and more efficient hydrocarbon filtration.



Users of Sanergrid SPI® Filter Systems:

SPI® Filters are an extensive range of products, suitable for a wide range of applications and flowrates. Should you have any uncertainty regarding whether the SPI® system will be effective with a specific hydrocarbon, Sanergrid® can test a sample through a nationally reconigsed laboratory, and produce an official report.

For specialist applications and bespoke flowrates, filters can be installed in parallel, or replaced with SPI®'s of a higher capacity, up-to and including bespoke designs.

Contact GES Group for more information on info@ges-group.com.

**It is recommended that filters are changed by their advised replacement date – continued use beyond this date exposes the user to a potential decrease in the solidification speed of the active media. Therefore, beyond this date, even if the filter has remaining capacity, there is an increased risk of a minimal oil escape through the filter. Replacement is typically every five years.*

Retention Tanks

Industrial equipment must be paired with retention containment of a volume at least 110% of the volume of hydrocarbons they contain.

The Sanergrid® retention tank product ranges allow you to comply with all regulatory and technical requirements.

All Sanergrid retention tanks ensure the full retention of the dielectric.

Retention Tanks with Removable Walls

3 tank ranges to suit your individual needs.

BDR-P & BDR-GC Features:

- 2 removable tank walls
- BDR-P painted RAL 7033 for indoor use
- BDR-GC hot dip galvanized for outdoor use
- Metal thickness 20 up to 30/10
- Secured with nuts and bolts + silicone joint

BDRSA Features:

- 4 removable walls
- Galvanised – for indoor use
- Secured with clamps + silicone joint

Flexible Retention Tanks

TRFLEX®-REFOR and TRFLEX®-ECO - for temporary transformer storage.

Features:

- TRFLEX®-REFOR - Tubular reinforced metallic structure for long period storage
- TRFLEX®-ECO - Right-angled metallic structure for short duration storage
- High resistance tarpaulin mechanically reinforced to corrosion, hydrocarbons and ultraviolet light
- Can be used outdoors with SPI® Filters
- Quick set-up and installation
- Retention capacity of 250 to 80, 000 litres
- Bespoke solutions for higher volumes

Outdoor Simple Retention Tanks

TRT® &TRT-MODULO™

TRT® tanks are mainly used for containment of transformer oils, but can be applied to any equipment containing non-explosive hydrocarbons.

The standard TRT® unit comprises a series of hot-dip galvanized steel retention tanks that ensure a service-life that is equivalent to the service-life of electrical transformers, or any other machine they are used with, in an indoor or outdoor environment.

A set of 2 adjustable beams allow for easy installation, and ensures the equipment remains above the residual water-level. Two watertight stainless steel valves in the base of the tank allow for simple installation of the Sanergrid® SPI® PETRO-PIT® kit, which will ensure hydrocarbon-contaminated rainwater filtration, and the continuous discharge of pollution-free rainwater.

Features:

- Hot dip galvanized retention tanks, designed for outdoor use
- Equipped with emergency siphon by-pass, adjustable beams at the bottom of the tanks, and a PETRO PIT® SPI® rainwater evacuation filter (filter optional, but recommended)
- TRT-MODULO solutions can be used for larger containment capacities, or longer duration outdoor storage
- Reusable, and easy to install

ERT® Monobloc & Modulo™ Extinguishing Retention Tanks.

For distribution transformers, auxiliary & autotransformers.

The ERT® Extinguising Retention Range is designed to prevent or reduce fire risk to electrical transformers. The range has metal baffles that are closely spaced, but which will allow liquid through, so that oil and rainwater can run in to the retention tank. In the case of a fire, the close spacing means that insufficient air penetrates the space, and the resulting oxygen depletion causes the fire to suffocate.

This fast method of fire suffocation decreases the probability of thermal runaway into the tank, and is an efficient, natural, and simple system that acts on 2 of the 3 components of fire simultaneously. A patented design with over 20 years of reliability, which is BS and EU approved.

ERT® Monobloc Features:
Self-load bearing hot dip galvanised retention tanks, equipped with an extinguishing cover, validated by CNPP.

- Adjustable beams to support the transformer
- Total dielectric containment
  (EU - 100% / UK – 120%)
- Dimensions and configurations adapted to every need
- Hot dip galvanised gratings 30 x 30 (optional)
- Stainless steel tapings and valve, emergency siphon by-pass
- SPI® Filter options for outdoor use
- Integrated lifting points for crane or forklift (optional)

ERT® MODULO™ Features:
- Retention tanks in 2, 3 or 4 modules, connected by special flexibles or flanges.
- Hot dip galvanized retention tanks for transformers up to 60T, equipped with a fire extinguishing cover. Validated by CNPP.
- Total dielectric containment
  (EU – 100% / UK – 110%)
- Dimensions and configurations adaptable
- Hot dip galvanised gratings 30 x 30
- Stainless steel tapings and valve, emergency siphon by-pass
- SPI® Filter options for outdoor use
- Extinguishing cover for transformer pit

EXTICOV™ + EXITCOV - LHD® Extinguishing Covers

Frame-based extinguishing cover for concrete pit in substations.

Features:
- Hot dip galvanized modular frames with extinguishing cover, tested in CNPP.
- Steel angle and anti-slip gratings
- Quick installation integrated inspection door, and self-lock-out of the extinguishing cover
- Requires a precise civil work drawing to manufacture the system (an in-situ measurement can be taken by a local installation partner)
- Ability to integrate a PETRO PIPE® Filter system for continuous rainwater drainage
- All parts can be connected with earth bonding strap (not included, responsibility of the installer)

SPI® Filter Technical Specification

Technology	PETRO PIPE®		PETRO PLUG®	PETRO BARRIER®		OIL BOND®
Range Name:	P-PIT	P-PIPE	P-PLUG	PETRO BARRIER Casted	Pump Through PETRO BARRIER (PTB)	Booms, pillows, powder
Description	Cartridge Filter (screw)	Cartridge Filter (screw or cast concrete)	Filtering for drain pipes	Filtration system casted in floor of retention pit	Filtration system external to the retention pit	Loose absorbent solidifying material.
Use	Horizontal in lower retention volumes	Inclined at 25o in medium and large retention volumes	Vertical in drain pipes of retention tanks	Vertical, casted in concrete in retention tank floors	Vertical, outside retention tank, with liquid pumped in	Emergency spill kit
Advised Replacement	3 - 5 years	3 – 5 years	1 – 3 years	5 years	5 years	N/A
Saturation Limit (approx.)	1 litre	3 -4 litres	1 litre	15 litres	15 litres	3x its own weight
Order of Magnitude	4 inches 40cm 1KG	6 inches 60cm 3KG	4 inches 30cm 1KG	24 inches 80cm 30KG	24 inches 100cm 45KG	N/A
Pre-Filtration Requirement	PFC44 Cartridge	PFB Cage	Top Hat Filter (THF)	THF Top Hat Filter	Cage, pump, and internal kit	N/A
Images						

GES Group are a leading Electrical and Mechanical Engineering company, serving customers throughout Ireland, the UK, and Europe. We are the UK representative and distributor for the innovative Filter and Containment Solutions, from the market leader, Sanergrid.

Sanergrid are dedicated to bringing solutions to market that reduce the environmental footprint and industrial risk of electrical projects or installations, while being cost-effective.

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Head Office
Grants Electrical Services
Pennybridge Industrial Estate
Ballymena
BT42 3HB
Tel: 02825 656406
Email: info@grantselectrical.co.uk

GES Automation
Trade Counter
Pennybridge Industrial Estate
Ballymena
BT42 3HB
Tel: 02825 656406
E: counter@grantselectrical.co.uk

Grants Electrical Services, Mallusk
Hyde Park Industrial Estate
McKinney Road
Mallusk
BT36 4PX
Tel: 02890 835567
E: rmchugh@grantselectrical.co.uk

GES Automation, Mallusk
Trade Counter and Electric Panel Building
Hyde Park Industrial Estate
McKinney Road
Mallusk
BT36 4PX
Tel: 02890 835567
E: rdpaul@grantselectrical.co.uk