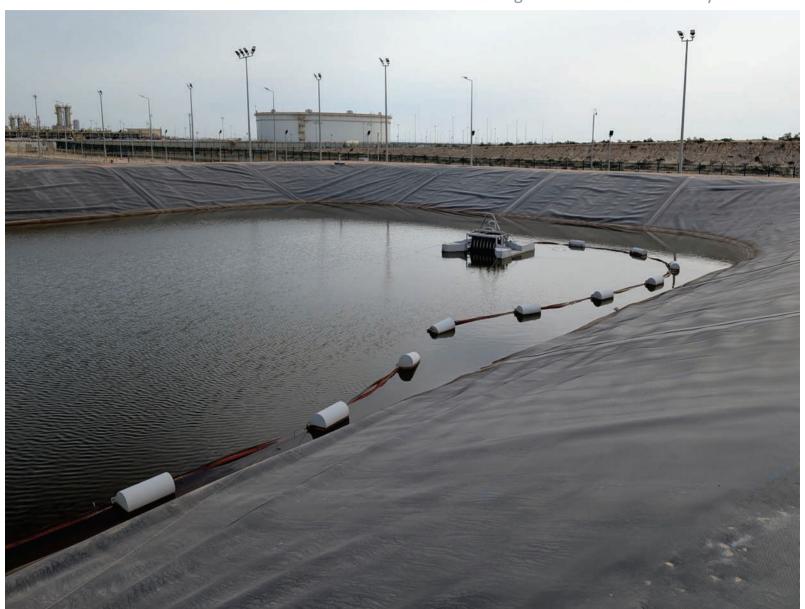
Waste Process Water Oily Water Skimming











Oily Water Skimming • **Powerpacks**

Permanent Booms

Vikoma is a world leader with over 50 years experience in the design and manufacture of reliable equipment for your oily water skimming. You can depend on our products to work reliably when you need them and Vikoma will be there to support you through the product lifecycle.

With a range of solutions which includes oil skimming systems, boom systems and powerpacks together with training and commissioning services, Vikoma is your one stop solution. We have a network of agents and distributors around the world with our regional sales managers, we are easy to reach and provide you with the level of service you would expect from a world leader.

LRQA CERTIFIED ISO 9001

Vikoma products are industry renowned for quality, durability and lifespan and we are fully accredited by Lloyds Registar Quality Assurance ISO 9001:2015.





We have a team of experts ready to help you, whether that's at budget setting stage or if you are ready to buy equipment. Talk to us and we can help build a package of equipment to suit your application or help you solve a problem.

Why install an oil recovery skimming system?

Vikoma skimmers are highly effective and while complying with legislation, our systems save money too by reducing the volume of slops and waste for disposal. The oil recovered is up to 98% oil content enabling it to be reused or recycled. Additionally, by recovering oil in open ponds and tanks this leads to a reduction in air pollution and odour caused by evaporating hydrocarbons.

Applications

Our products suit many applications including oil/water interceptors, ballast ponds, process tanks, settling tanks, storm water, API separators, man holes, evaporation pits and covering a range of oils and viscosities.

Areas of use

Areas of use include oil and gas refineries, hydroelectric plants, iron and steel mills, chemicals, food processing, power generation, mining, ground water remediation, automotive plants, machining, hydraulic fracturing (fracking).

Oil Recovery Skimmers

Vikoma skimming systems can be used in tanks or located in separating interceptors and sumps to recover the oil. We offer highly efficient disc skimmers which can recover waste with up to 98% oil content as well as weir skimmers.

Index

Skimming systems	Page 3 - 7	Technical Information	
 Oleophilic disc skimmers 	Page 3 - 4	 Materials 	Page 10
 Weir skimmers 	Page 5	 Operating areas 	Page 10
 Intank skimmers 	Page 6	 Value of recovered oil 	Page 10
 Mop skimmers 	Page 7	 Area of influence of skimmer 	Page 11
Powerpacks	Page 8	 Disc skimmer efficiency 	Page 11
 Electro-hydraulic 	Page 8	 Pump types 	Page 12
 Pneumatic 	Page 8	Project expertise	Page 13
• Systems	Page 8	Services and support	Page 14
Permanent boom systems	Page 9 - 10		

Applications

We offer a highly efficient range of skimmer suited to many industrial applications. Recovered oil can be reused (blended back into the feedstock) or utilised for other activities, such as incineration and steam generation or recycled and sold on to other users. Oil skimming also enables the user to meet regulatory requirements, as well as significantly reducing emmissions to the atmosphere.

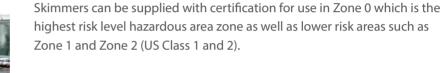


Oil Refineries and Petro-chemical

Vikoma oil skimming systems have a long history of being used in oil refining and petro-chemical operations.

The skimmers are typically used in the water treatment process to efficiently remove oil from water. Typical oil/water recovery = 98% oil with 2% water.

Vikoma skimming systems can be powered by electro-hydraulic and pneumatic power units.



Electro-hydraulic power units can be supplied with certification for use in Zone 1 or 2 as well as for use in non-hazardous areas.

Global legislation is getting more stringent, and many separators/ interceptors are now being designated as Zone 0 hazardous areas. Vikoma has developed a range of skimming systems suitable for these highly hazardous operating areas.



Steel Works, Power Stations, Pharmaceuticals, Palm Oil, Product Storage / Tank Farms

Oil skimming is used globally in numerous industrial applications to remove oil and grease from the surface of the water or other liquids found in waste and process water.

Oils range from various hydrocarbons and by-products to natural oils such as Palm Oil. Recovered oil can be reused or recycled and by removing oil from coolants, the life of the coolants is extended which gives beneficial cost savings.





In applications such as steel mills, coolants become contaminated with oil and grease which can be filtered and reused extending the life of the coolant. Skimmers are used to remove oil from the surface of wastewater prior to discharge, preventing pollution of waterways and ensuring environmental regulations are met.

Oleophilic Disc Skimmers

Oleophilic industrial disc skimmers are highly efficient skimmers recovering oil at 98% oil to water ratio. There are two disc types, either flat/plain disc (P disc) or T disc configuration. Oil attaches itself to the disc through oleophilic action and water does not. As the disc rotates the water drops off. Scrapers are placed in optimum positions to ensure they scrape the recovered oil from the disc. Recovered oil is then corralled down and into the recovery hopper where it is collected and pumped.





The T and P disc options work in exactly the same way, however the T disc gives a greater surface area and better results when rotating the discs at higher speeds. This can be important as faster disc speeds are more efficient at recovering very light oil contaminants. When selecting the skimmer it is important to determine the effective area of operation of the skimmer and not only the skimmers recovery capacity. For example, our Maxi skimmer has a recovery capacity of up to 14m³ per hour, however the effective area should also be considered. The effective area is known as the skimmers area of influence and is the area from which the skimmer can draw in floating oil contaminant towards itself. The number of discs selected determines the area of influence.

Oleophilic disc recovery considerations:

- T disc variant offers improved recovery efficiency when recovering very light oil viscosities in the region of 1 Cst
- T disc configuration prevents light oil from being thrown from the disc at higher rotational speeds
- Disc rotation helps to 'draw' the oil contaminant towards the skimmer
- Oleophilic disc recovery is very efficient, with oil to water pick up ratios better than 98%

Maxi Disc Skimmer





The largest skimmer in the range with a maximum recovery capacity to 14 m³ per hour. The area of influence is in the region of 95m² principally due to the large number of discs on the skimmer.

- 8 rotating discs offer a large area of influence
- On board recovery pump with variable spead control from the onboard float valve fitted within the recovery sump
- Hydraulically driven lobe pump or air operated diaphragm pump
- Hazardous area classification from Zone 0, Zone 1, Zone 2 or Non-hazardous
- Can be driven hydraulically, pneumatically or a combination of both utilities
- Standard model is manufactured from garde 316 stainless steel with the option of painting
- Upgrade to exotic stainless steel such as 6Mo and super duplex
- Designed and engineered to be afully automated safe system, however the set up can also be configured for timed or manual intermittent use

Midi Disc Skimmer





Mini Disc Skimmer





Komara Micro



A mid size skimmer with a maximum recovery capacity to 9m³ per hour. The area of influence is in the region of 65m². The system can also have various drive options as per the Maxi system and the onboard recovery pump can also be a hydraulically driven lobe pump or air operated diaphragm pump.

- Mid sized skimmer in the range
- 5 rotating discs
- On board recovery pump with variable speed control from the onboard float valve fitted with the recovery sump
- Hazardous area classification from Zone 0, Zone 1, Zone 2 or Non-hazardous
- Can be driven hydraulically, pneumatically of a combination of both utilities
- Standard construction is grade 316 stainless steel with option for painting
- Upgrade to manufacture using exotic stainless steels such as 6Mo or Super Duplex.
- Designed and engineered to be a fully automated safe system however the set up can also be configured for timed or manual intermittent use.

A smaller skimmer with a maximum recovery capacity to 5m³ per hour. The area of influence is in the region of 35m². The system can also have various drive options to rotate the discs hydraulically or pneumatically. The pump is remote from the skimmer and should be speed paired with the recovery efficiency of the disc skimmer so this set up is more of a manual skimming solution.

- · 2 rotating discs
- Remote recovery pump variable speed control from system power pack or drive source
- Hazardous area classification from Zone 1, Zone 2 or Non-hazardous
- Can be driven hydraulically or pneumatically
- Standard construction is grade 316 stainless steel with option for painting
- Upgrade to manufacture using exotic stainless steels such as 6Mo super duplex
- System is available with an option to fit a variable speed float valve within the skimmers recovered oil sump, the set up enables the system to be more semi automated

This highly efficient disc skimmer is the smallest in the range. A trolley mounted system, it is a light and portable skimming system for use in oil traps, manholes, pits, small tanks, drums and chambers. The system is available with a variety of drive options to include battery, pneumatic or mains power.

- Portable light weight skimmer
- Efficient system
- Ideal for areas with limited access
- Self sufficient package on a trolley

 $oldsymbol{3}$

Weir Skimmers

Our Vikoma Dragonfly range of skimmers are floating weir skimmers capable of recovering many types of oil. They can be used in open environments or closed tank applications. The depth of the circular weir is controlled by a float unit situated in the oil collection trough, the control of which is dependent on pump suction.



The Dragonfly skimmer can be supplied with a variety of different transfer pumps in order to meet the use requirements for all including:

- Diesel driven
- Electric driven
- Pneumatic
- · Hydraulic driven

Dragonfly Maxi



The Dragonfly Maxi is the largest of the Vikoma weir skimmer range. Capable of up 15m³/h recovery, dependant on suction provided by the pumps. The unit is typically constructed of 316L stainless steel but is also available in other materials to suit the environment:

- 316L stainless steel
- · Super Duplex austenitic stainless steel
- 6Mo austenitic stainless steel

Dragonfly Midi



The Dragonfly Midi follows the same design principles as the larger Maxi Weir Skimmer, with a capacity of 5m³/h.

it is designed to fit in a more confined spaces such as

- Sumps
- Wells
- Small separation chamber/pits

Another benefit of this more compact design is the lightweight nature, making it an easy one-man operation for deployment.

Dragonfly Mini



A versatile weir skimmer ideally suited to difficult to reach areas such as access holes, sumps and pits.

With use of a simple winch system this can be safely deployed.

A typical system would be complete with pneumatic pump, but as with all weir systems in this range, pumps can be specified to the site requirements.

The whole system is packaged on a trolley for easy storage and manoeuvrability around the work site.

In Tank Skimmers



The In-Tank skimmer is a floating weir skimmer. It is designed primarily for the recovery of a range of floating pollutants and can be used in either fixed or floating roof tanks, It typically consists of a floating Dragonfly skimmer and discharge tube assembly.

Our intank skimming systems can rise and fall with the roof structure, either independently or fixed to maximise efficiency.

Skimming systems can be manufactured from a wide range of materials including SS 316L, 6Mo, Super Duplex and Incalloy 825.

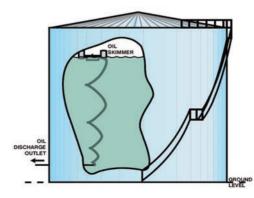
Above: swivel arm in tank skimmer system

Swivel Arm Discharge

A key part of our In Tank Skimming System is the Swivel Arm, this allows the system to move with the water level and sit at the base of the tank when little to no water is present. Vikoma can design and supply single or multiple articulated discharge arms in order to suit different tank shapes and outlet sizes. Systems can be manufactured from a range of different materials including SS 316L, 6Mo, Super Duplex and Incalloy 825.



Flexible Hose Discharge



An alternative type of in-tank skimmer system uses a flexible discharge hos The hoses coil under the skimmer to allow for height variation inside the tank. The system can be supplied with guide wires or a column in order to keep the skimmer fixed in lateral position. A composite discharge hose also included for arduous environments. Additional buoyancy is provided to maintain the skimmer for effective skimming operations.

The drawing to the left shows an in-tank skimmer system using a flexible discharge hose, an alternative to a swivel arm discharge.

Other Skimmers

Crust Lance Skimmer



In some industrial applications such as refineries and petrochemical plants there are often tanks, waste pits, separators and interceptors that have been left with wastewater contaminated with hydrocarbons in them and this can lead to a crust being formed on the surface.

Our Crust Lance system allows operators to safely remove the crust and transport for disposal or reprocessing. It comprises a floating suction head and an electric driven transfer pump. Both the floating suction head and transfer pump are certified for use in hazardous areas.

Delta Skimmer



The Delta skimmer is a self-contained free floating oil recovery system for operation in shallow waters. Lightweight construction makes it particularly valuable around piers, jetties, lakes, ponds, ports, rivers and inland waters as well as for beach clean-up. Benefits include:

- · Can be deployed in inaccessible areas
- Lightweight aluminium
- · Can be used by a single, unskilled operator
- No moving parts and is therefore maintenance free
- Recovery rate of 24m³/hr

Mop Skimmer



Our Mop skimmer effectively removes surface hydrocarbons from an oil/water interface for continuous operation or occasional use. Interchangeable mops can be provided to suit the viscosity of the recovered oil. These skimmers are ideally suited to oil recovery in difficult to reach areas and those areas inaccessible for larger skimmers. Portable or permanent installation units available. Benefits include:

- · Long term continuous operation
- Easy to maintain, install and operate
- · Can be used in deep pits and boreholes
- Suitable for most environments
- · Mop length and size to suit
- Available with electric, hydraulic and pneumatic drive options.





Powerpacks

The powerpack is needed to provide reliable and efficient power to operate skimming equipment. The powerpack provides the energy needed to rotate the oil skimmer discs for oil recovery and also the oil transfer pump. It is generally fitted with local controls and safety systems for placement within a hazardous area. The system can also be connected to control systems. The powerpack can be fitted with a hazardous area control box that houses the skimmer controls, starter and alarms. Electro-hydraulic, pneumatic and diesel powerpacks are available with intrinsically safe local control and remote override options.

Electrohydraulic



An electro-hydraulic power pack combines electric and hydraulic technologies to provide safe and reliable power to the oil skimmer and transfer pump. Vikoma electro-hydraulic power packs are robust and reliable and are designed for use in arduous conditions. They can be fitted with customer Specific components as well as controls and monitoring equipment.

Vikoma electro-hydraulic power packs are designed for continuous, unmanned operations minimising downtime and maintenance requirements. They can be designed for use in non-hazardous and Zone 1 and 2 ATEX locations.



The electo-hydraulic powerpack requires a 3 phase power supply. We produce hydraulic pressure and flow to drive the skimming system through an electric motor

- Certified for use in hazardous areas
- Designed and manufactured for hazardous and harsh environments
- In-built safety system



We have the option of using pneumatics to drive the skimming system or alternatively the option of using plant air to drive a hydraulic pump to provide hydraulic pressure and flow, so the same format as the <code>llclro-hydraulic</code> system. These systems are particularly useful when electrical supplies are limited.

- · Uses plant air
- Certified for use in hazardous areas
- Designed and manufactured for hazardous and harsh environments

Systems



Vikoma will work with you to configure a system to suit the operating location. A number of power options are available to suit site conditions.

- Electro hydraulic
- Pneumatic
- Diesel

Permanent Protection Booms

Vikoma offers a range of booms (sometimes referred to as barriers) which can be deployed permanently to protect inlets, outlets or channels in industrial applications such as refineries. They can be used to prevent pollutants escaping or entering industrial facilities. Permanent booms are designed for long exposure deployment in sheltered waters.

Our booms do not require inflation, they are durable and are sealed with high density polyurethane floats to ensure buoyancy is maintained. They are also resistant to abrasion and marine growth. Vikoma permanent booms have closed cell foam buoyancy members. Barriers available in neoprene, polyurethane or PVC belt and our protection booms can be used in conjunction with our skimming packages for a complete containment and recovery solution.

POD Booms

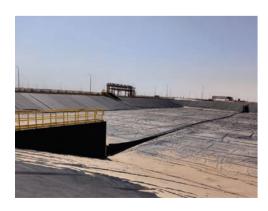
The tough permanently sealed floats are moulded in High Density Polyurethane (HDPU) that is highly resistant to impact and abrasion. The floats have been designed to bolt 'back to back' through the skirt. They may be supplied pre-fitted, or as separate parts, to maximise deployment rates or storage capacity.



- Robust design maintains continuous freeboard to contain oil and debris
- Tough materials have long life cycle and low maintenance
- Moulded pods provide excellent buoyancy and stability
- Easy to manoeuvre and position
- Easy deployment
- · No inflation needed
- Constructed from strong, flexible materials
- Operate in temperatures from -40°C to +90°C
- Ideal for permanent deployment

Neoprene Foam Filled Booms

Sentinel Foam Filled Boom comes with closed-cell foam filling to provide a robust and reliable containment boom solution which can be installed permanently or semi permanently to suit your requirements. This makes an ideal solution for the protection of areas of environmental concern, water intakes, evaporation ponds and high-risk oil-spill areas in and around ports.



- · Robust design maintains continuous freeboard to contain oil or debris
- Tough Materials have long life cycle and low maintenance
- Easy to manoeuvre and position
- Easy deployment
- No inflation needed
- Internal closed cell foam buoyancy to ensure integrity even if neoprene outer layer is compromised
- Constructed from strong, flexible materials
- Operate in temperatures from -40°C to +90°C

Boom Accessories



Vikoma manufacture and supply an extensive range of ancillary equipment and products to support the boom layout of your facility. They include:

- Sliding systems
- Anchor sets
- Night lights and high visibility strips

Vikoma anchor pillars are designed to be used with Vikoma booms. They are used to secure booms to vertical walls and can be fitted to separators, inlets and outlets, drainage channels and culverts. The systems are designed to automatically adjust to varying water levels so that pollutants are effectively contained awaiting recovery. The anchor pillars and floats are manufactured from 316 grade stainless steel so that they can be used in arduous environments.

Technical Information

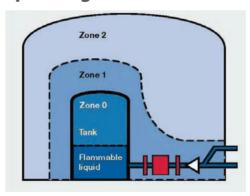
Materials



We offer systems in a number of materials to suit the operating environment these are typically:

- 316L stainless steel
- Super Duplex stainless steel
- 6Mo stainless steel
- Hazardous and dangerous environments
- PH levels, solvents, acids, temperature, caustic and H2S

Operating Areas



Value Of Recovered Oil



We can provide systems with certification for use in hazardous areas. These areas include Zone 0, Zone 1, Zone 2, 1 ATEX, Class 1 (Division 1 or 2) as well as country specific hazardous zone operating areas.

Temperature class and gas group also available along with voltage and plate options.

Zone 0 signifies the highest risk due to the constant or frequent presence of an explosive atmosphere.

All hydrocarbons have value and Vikoma skimmers are able to recover different types of hydrocarbon with a very small water content, typically less than 2% water (98% + oil). The hydrocarbons recovered using Vikoma skimmers can have many uses:

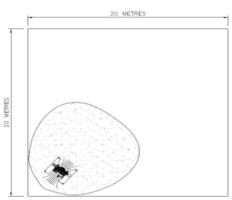
- Reused as feedstock in a refinery / petrochemical plant.
- Sold as waste oil.
- Power generation / steam generation or to power incinerators.

By reusing or selling the recovered oil Vikoma skimmers have a very quick payback period and the cost of the skimmer system can be realised in a matter of months.

Skimmer area of influence



Above: Shows oil being pulled into skimmer



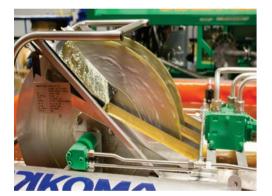
Above: Shows area of influence ie. the surfce area a skimmer can pull i floating oil

The skimmer area of influence is the area from which the disc rotation alone will draw isolated oil patches into the skimmer.

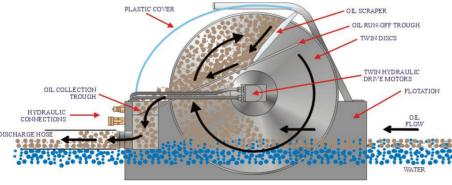
Diagram B shows the plan view of a Maxi Disc Skimmer within a pond with dimensions of 20 metres by 20 metres, the skimmer has been positioned to take advantage of the prevailing wind direction and the shaded portion shows the potential area of influence.

Disc skimmer efficiency

We offer highly efficient disc skimmers and also weir skimmers which are less efficient. Our disc skimmers have two disc types (see page 3) They work as follows: Oil sticks to the disc and water does not, oil is scraped off the disc to a hopper for discharge, typical weir skimmers / C pipe / Rota skim / skim pipe = >80% water



Above: Oil sticking to the disc and being scraped off.



Above: Typically 98% oil gets picked up with only 2% water

Safe operation



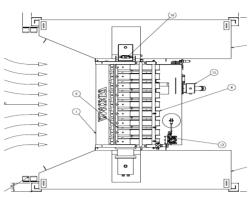
We design a number of safety features for safe operation in hazardous environments. These include:

- Hydraulic oil temperature.
- Pump temperature.
- · Low hydraulic oil.
- · Hydraulic pressure and pressure relief
- Electric motor overload protection.
- · Earthing.
- IECEx, ATEX, Zone 0, Zone 1, Zone 2, Class 1 (Division 1 or 2) and country specific electrical requirements.
- We can also offer participation in HAZOP
- CE / UKCA Badging

Pump Types and Control

Vikoma can provide multiple options when looking for pump solutions to meet your needs. These options include lobe pumps, positive displacement pumps, diaphragm pumps and vane pumps.

With a nmber of drive options including Electric, Hydraulic or Pneumatically Driven Pumps.



Above: Automatic pump control



Above: Float valve controlling the transfer pump

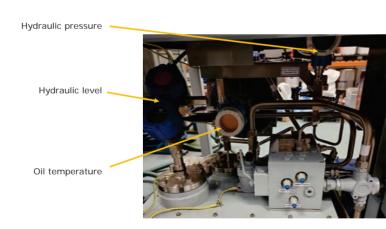
Our pumps can incorporate the following features:

- Automatic control of the pump
- Pump operation only when recovered oil is present which reduces wear on the pump which increases lifespan of the pump
- Designed for operation in hazardous areas
- No manual input required.
- · Simple and easy to maintain.

Controls - switches / transmitters



Above: Atex switch



Above: ATEX Transmitters

Vikoma electro-hydraulic powerpacks (EHPP) can be supplied with switches or transmitters for use in hazardous operating areas. Our pneumatic control unts (PCU) can be supplied with switches or transmitters for use in hazardous operating areas. Examples of transmitters or switches include:

- · Low hydraulic oil
- Oil temperature
- Pump temperature
- Effluent level

Expertise throughout your project

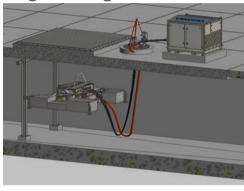
Project Management



A Project Manager will be assigned to your project, becoming the primary point of contact throughout the duration of the contract, from receipt of your purchase order, through delivery, and beyond.

The Project Manager works with our internal engineering and production teams, and will collaborate directly with you ensuring the smooth transfer of documentation to and from each party. The establishment of this dedicated communication channel leads to a close relationship between you and our project teams, enabling the smooth running of each contract.

Engineering



Our experienced in-house engineering team work closely with the project team to ensure equipment designs meet your requirements and are technically compliant in line with local and international standards. Working together with you towards the swift resolution of questions or comments raised during the documentation submittal stages leads to minimal revisions being required to gain approval.

Employing 3D modelling to produce CAD drawings Vikoma's experience gives you clarity of designs and confidence that the equipment will suit your specific environment.

Documentation



We have our own high standards of documentation, but we can just as easily work within your templates for documents if required. We are able to tailor our packages to meet your project requirements. Documentation pack contents will be agreed for your project and may include:

- · General arrangement drawings, cross sections and bills of materials
- System layout schematics, showing major components and interconnects
- Site layout drawings showing connection details
- Data dossiers
- Hydraulic circuit diagrams
- Instrument schedules
- Noise data sheets
- Fabrication procedures
- Test procedures and reports
- Operators and maintenance manuals
- SPIR spares forms

- Equipment data sheets
- Control schematics
- Certificates of conformity
- QA/QC manual
- Electrical safety certificates
- Installation manuals
- ATEX / IECEx certified oil skimmer systems
- Hazardous area certification approved by third parties if required

Services and Support

Commissioning and Installation



Spares and Support



An experienced team of engineers are available for commissioning our equipment.

Services include:

- Safety
- Equipment inspection
- Equipment training
- Equipment set up and installation
- Pre start checks

Correct commissioning ensures that operators are fully trained in the safe use of equipment and are aware of essential maintenance requirements. Equipment is then ready for use.

Many of our products are supported for 10 years with a full range of comprehensive spares kits available for emergency use as well as regular servicing. Products have unique serial numbers for full traceability. We recommend purchasing appropriate spares when buying equipment for efficiency but you can contact us at any stage of your product life and we will be pleased to help you. With on-going technical support and an extensive stock of spare parts and kits for both preventative and corrective maintenance, spares can be shipped quickly to site, ensuring minimum down time for equipment.

Repairs and Refurbishment



We offer a full repair and refurbishment service to prolong the life of your product and keep costs down. As well as cost advantages this can be an environmentally friendly solution keeping your carbon footprint down. With a full range of in-house production capabilities, we can service and refurbish booms, skimmers, replacement product and powerpacks and this can reduce lead times compared buying a replacement product. Our customers have been delighted with the service offered and quality of refurbished products.

Maintenance and Servicing



Regular servicing and maintenance of equipment is key to prolonging it's life and ensuring it operates correctly. Equipment can be returned to our factory for maintenance and servicing, or we may be able to provide these services at your site. Our experienced team of servicing and commissioning engineers are qualified for offshore, confined spaces and working at height. They can also train your team in maintenance activities.

We will help you to support a move towards a circular economy and keep equipment in use for as long as possible.





Protecting our environment over 50 years



Providing reliable and innovative oil recovery and environmental solutions designed and manufactured by our experienced in-house team for over 50 years

We are proud to have an experienced and qualified team of employees. With a strong and experienced board of directors and a multi-disciplined management team, Vikoma continues to be a world leading company committed to delivering quality, reliability and innovation.

Our in-house team has many years of experience in systems for hazardous areas and offer solutions to meet end user needs with required certification. We are confident that we have the flexibility and experience required to meet the technical specification of any end user.

Full ISO 9001:2015 accreditation for design, manufacture, installation, commissioning and training.

For more information please contact us on +44 (0)1983 200560 or sales@vikoma.com or see our website.







Oily Water Skimming Powerpacks
 Protection Booms

We have an ongoing development program and reserve the right to amend the specification of our products without prior notice. All quoted specifications are approximate. Issue 6 011225

