marine

RIVERTRACE

Specialists in water quality monitoring

www.rivertrace.com

INTRODUCTION

Rivertrace is a market leader with over 30 years experience of Oil in Water Quality Monitoring. Rivertrace manufacture oil content monitors for the marine, offshore and industrial markets with up to date technological engineering solutions to meet strict regulatory requirements.

Our impressive client list includes leading European, American and Asian separator manufacturers. We also supply most of the major International Shipping Companies together with the leading Offshore Oil and Gas Operators as well as Premier Land Based Industrial Organisations.

We are dedicated to producing high quality products and service to meet oil in water monitoring solutions.

Rivertrace are accredited to ISO 9001:2008 and employ around 25 people at our 10,000 sq. ft. factory in Redhill.

Local sales, service and support is provided by our strong global network of agents.

OUR SALES & SERVICE NETWORK

CONTENTS

SMART CELL 15PPM OIL CONTENT

APPLICATIONS

- Bilge Water Discharge
- Rig Slop Tank Discharge
- Air Cooler Drains Overboard Discharge
- Oily Water Separator Discharge

By utilising the "**Smart Cell**" Detector Array Technology, developed by Rivertrace, the OCM analyses all three oil types (HFO, Diesel and Emulsions) simultaneously without the need for re-calibration.

A manual cell cleaning device is included as standard to easily enable routine maintenance. Optical cell fouling is recognised as a leading cause of monitor malfunction or incorrect reading. By simple operation of the manual cleaning device, the "Smart Cell" remains in optimum operating condition.

Replacement calibrated measuring cells can be purchased for easy change over on board the vessel and calibration verification kits enable the crew to demonstrate the monitor is within factory calibration to PSC Surveyors.

The Smart Cell Bilge Alarm is readily available as a 5ppm version if required. It can also be tailor made for Hazardous Environments (Zone 1 & 2) as an Exd system with Auto Clean, all enclosed in an explosion proof cabinet.

We also offer the system in an Anti-Magnetic version, ideal for submarines and minesweepers.

OPTIONS >

All options can be ordered from new or retrofitted to existing RTE Smart Cell monitors.

FLOWSWITCH > The flowswitch option has been designed to ensure that bilge water is flowing through the measuring cell when in monitoring mode. An error is shown on the display if there is no flow. The flowswitch monitors the flow of water through the cell. This ensures that the flow cannot be shut off accidently or maliciously. In case of no flow, the Smart Bilge will close the overboard discharge valve.

AUTOCLEAN > The autoclean option has been designed to ensure that the measuring cell glasstube is kept free from fouling. Cell fouling is recognised as a leading cause of monitor malfunction. Fitting the Autoclean removes the need for the ship's crew to remember to clean the cell manually.

VERIFICATION > The monitor's calibration can be checked using our verification kit. This is an approved method of demonstrating that the unit is still working correctly to Port State Control and Class.

MONITOR TO MEPC 107(49)

SPECIFICATION

MEASUREMENT	
Oil types:	HFO, Diesel and Mixture C (IMO defined)
Clean water calibration:	+/- 2ppm of factory set values
Oil range:	0 - 40 ppm
Accuracy oil + solids:	+/- 5ppm up to 30 ppm
Solids discrimination:	100ppm Iron Oxide in 10 ppm Diesel
Response time:	< 5 sec (oil reading)
ALARMS	
Oil alarm 1 setpoint:	1 – 15 ppm user adjustable
Oil alarm 2 setpoint:	1 – 15 ppm user adjustable
Oil alarm 1 delay:	0 – 5 seconds user adjustable
Oil alarm 2 delay:	0 – 600 seconds user adjustable
INPUT / OUTPUT	
Analogue output:	Loop powered 4-20mA / 0 - 20mA 24V
Switch inputs:	2 x switch inputs for separator & flow status
DATA STORAGE AND RETRIEVAL	
Calibration data storage:	Stored in cell
IMO required data:	Stored in Control enclosure
IMO required data retrieval:	Via LCD display, RS 232 comms link or USB
SYSTEM AND SUPPLY	
Supply voltage:	115 or 230V AC, 50 – 60Hz (24V AC & 12V DC available)
Supply voltage Consumption:	< 50 VA incl. solenoid valve
Supply voltage tolerance:	+/- 15%
Projected life:	> 50,000 hrs
Protection class:	IP 65
Approvals:	MEPC 107(49) – DNV-GL, USCG, CCS, Class NK, Russian Register, Transport Canada.
Weight:	3.2 Kg / 7.05lb

Specifications and system descriptions accurate at time of printing. These are subject to change.

SMART PFM 107 OIL-IN-WATER

APPLICATIONS

- FPSO/FSO/FSU Produced Water Discharge
- Drill Rig Slop Tanks
- Oily Water Separator Discharge
- Regulatory Compliance

PRINCIPLE OF OPERATION

The monitor measures particulates in the sample stream on a continuous basis by passing the process fluid through a proprietary photo optical measuring cell developed by Rivertrace Technologies.

Using a combination of optical recognition algorithms and light intensity it is possible to differentiate between Oil particles, Gas/Air Bubbles and Solid particulates in the range 0-500 microns. Flow and particulate characteristics can be visualised live via remote access and via optional dedicated software on any Windows PC.

Oil concentration, pressure, temperature and oil alarm status are displayed on an easy to read back lit alpha numeric display. Oil concentrations, alarms and fault log are stored within the system to comply with the reporting requirements of IMO resolution MEPC 107(49) and can be accessed remotely or downloaded onto a pc via LAN or USB for further analysis. When connected to the internet it is possible for remote diagnostics to be performed by the manufacturer or an approved service centre.

The Smart PFM offers a choice of auto cleaning methods to ensure the accuracy is maintained at all times. Dependant of the utilities available you can choose from an air driven solenoid, electronic actuator or high power ultrasonic cleaning method. The cleaning is fully automatic and operates whenever it senses contamination of the optical windows.

FEATURES

- Oil, gas, suspended solid inflow measurements
- Oil type independent – no calibration required
- Solid particles and gas contamination independent
- Measure concentration, size and number density of oil, solids and gas
- Embedded windows with full auto restore via USB memory Stick

MONITOR

SPECIFICATION

Oil concentration range	0 - 40 ppm for MEPC 107(49) – higher ranges available
Oil concentration accuracy	+/- 1 ppm
Particle size range	1 to 500 µm
Oil alarm 1 & 2 operating point	5 ppm or 15 ppm maximum (adjustable)
Oil alarm 1 operating delay	1 - 5 seconds
Oil alarm 2 operating delay	10 to 600 seconds
Alarm contact rating	5 Amps at 230 VAC
Alarm relay mode	De-energised in alarm state
Output signal	4-20 mA
Network communication	Ethernet (RJ45) – remote access – Wi-Fi optional with additional hardware
IMO Data transfer	USB 2 Memory stick
Ambient temperature	0°C to 55°C (32°F to 131°F)
Humidity	95% maximum non condensing
Sample temperature	1 to 70°C (33.8°F to 158°F)
Sample flowrate	0.5 to 5 l/min (0.26 to 1.3 gpm)
Sample pressure	1 to 10 bars (14.5 to 145 psi)
Clean water requirements	None
Cleaning system	Compressed air at 6 bar (87 psi)
Weight	28 kg (62 lbs)
Dimensions [mm]	Height: 528mm (20.8”), Width: 600mm (23.6”), Depth: 280mm (11”)
Supply voltage	100-240 VAC or 24 VDC option available
Supply variation	+/- 10% of nominal voltage
Supply frequency	50 - 60 Hz
Power consumption	50 VA normal, 100 VA peak
Degree of ingress protection	IP65
Approvals (pending)	MEPC.107 (49), MED, UL

SMARTSAFE ORB BILGE OVERBOARD

APPLICATIONS

- Bilge Water Discharge Security
- Electronic Oil Record Book
- Oily Water Separator Discharge
- Protection Against Magic Pipe

The Smartsafe ORB (oil record book) Bilge Overboard Security System was developed in response to our customers' worldwide requests and requirements. This system records the oily water discharge process of any Oil Water Separator (IMO - MEPC 60.33 or 107.49) thus avoiding the common mistakes of manual entries and log variations in the oil record book. This is often seen as an easy target for Port State Control and other Marine Enforcing Agencies.

In its simplest form the Smartsafe ORB will utilise the ships GPS and records the process of the bilge water discharge. The base unit documents the vessel's time/date/latitude and longitude of the start and stop of the discharge process. The event summary is displayed on the control screen for easy viewing and is used to annotate the oil record book.

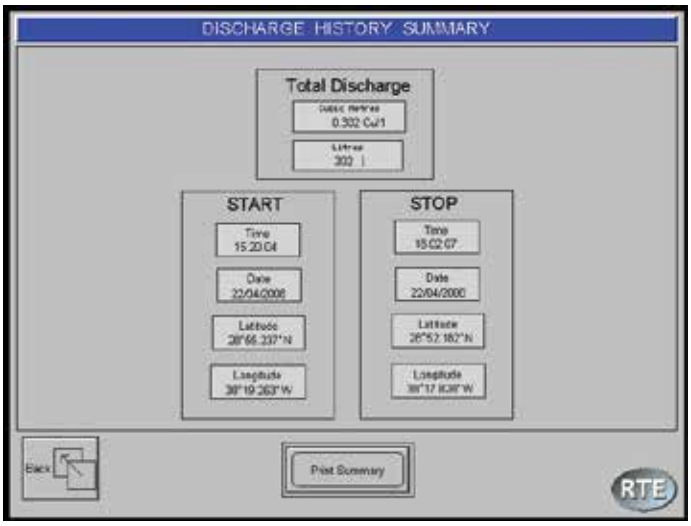
The system has the ability to record data from up to 3 Oily Water Separators (OWS). This data can be downloaded to a PC, printed or emailed using the built-in email application.

The Smartsafe ORB has sufficient memory to store three years of typical discharge records.

OPTIONAL COMPONENTS

- GPS + Interface Unit
- Printer
- Flow Meter
- Secondary Diverter Valve
- Separator Interface Unit

Summary Discharge Log



SECURITY SYSTEM

SPECIFICATION

Supply voltage:	100 – 240V ac
Supply variation:	±10% of Nom. Voltage
Supply frequency:	50/60 Hz
Consumption:	30 VA Max
Control display:	LCD with touch screen interface

Specifications and system descriptions accurate at time of printing. These are subject to change.

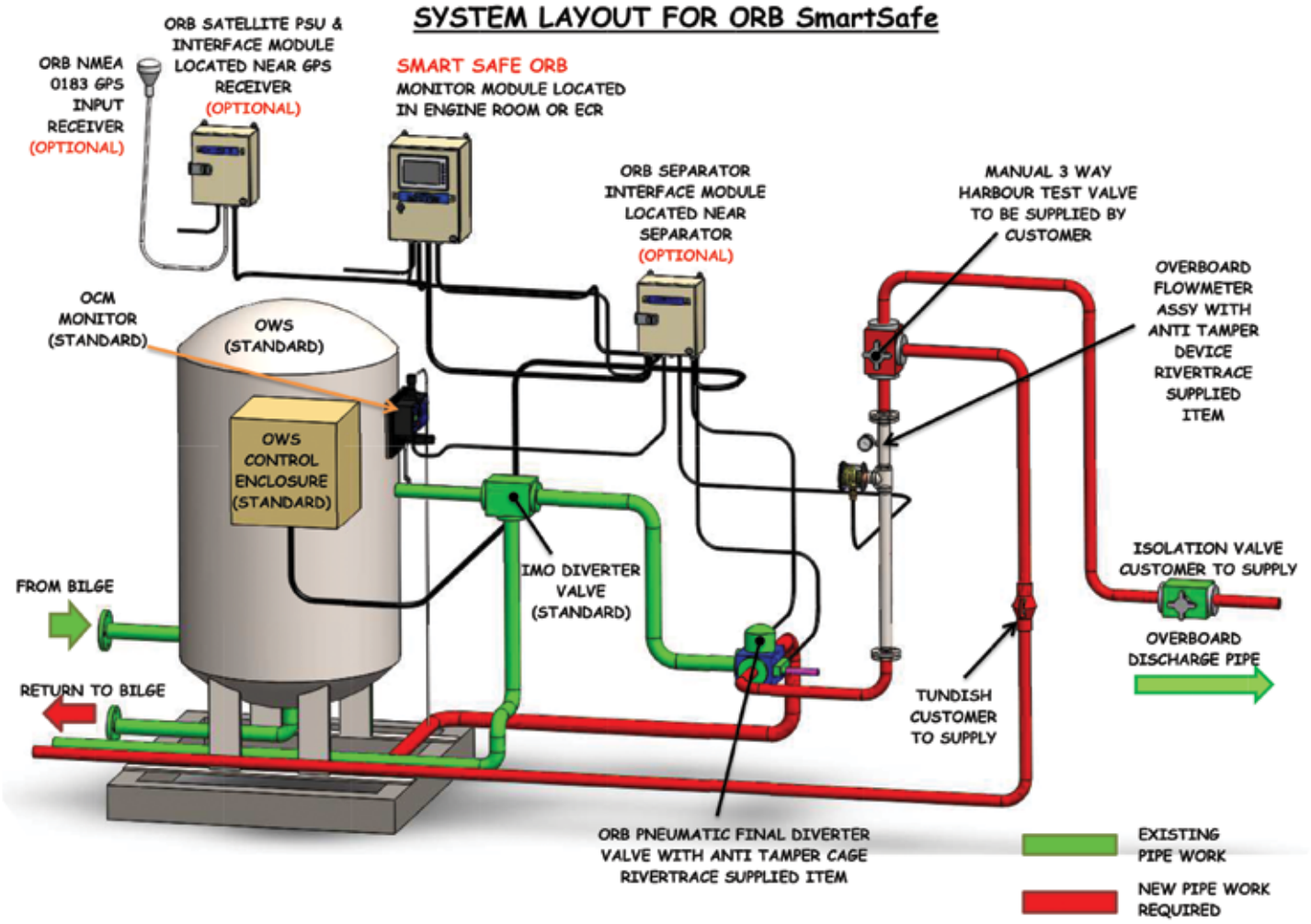
This system may be installed in line with any new and existing IMO MEPC 60(33) and 107(49) approved monitors.

OCD CM - MEPC 60 (33)

Smart Cell – MEPC 107 (49)

ABS TYPE APPROVED PRODUCT

SMARTSAFE ORB BILGE OVERBOARD



SECURITY SYSTEM

OPTIONAL COMPONENTS

GPS & INTERFACE MODULE:	Where the ships GPS is not able to be used, in cases where there are no spare outputs for example, Rivertrace can provide a standalone NMEA 0183 GPS and Interface module that connects directly into the Smartsafe ORB.
FLOW METER & SECURITY CAGE:	Adding a tamper proof electronic Flow Meter to the Smartsafe ORB enables the exact amount of water discharged to be measured which gives the following advantages; Volume of actual Oil discharged overboard can be calculated and recorded utilising the PPM reading from the OCM.
SECONDARY DIVERTER VALVE & TAMPER PROOF SECURITY CAGE:	To increase the overall security of the system to prevent accidental or malicious discharge or separator bypass, a secondary diverter valve with position feedback can be installed after the standard IMO diverter valve. This secondary valve is controlled solely by the Smartsafe ORB and will immediately be closed should a malfunction or malicious act be detected.
SEPARATOR INTERFACE MODULE:	In cases where the Smartsafe ORB is installed in the Engine Control Room and the signals from the OCM or Separator are not compatible, a separator interface module is required. This converts any signals from any OCM and any Oily Water Separator into a compatible signal for the Smartsafe ORB. This also enables the Smartsafe ORB to be retrofitted to any vessel irrespective of the type of equipment fitted.
PRINTER:	By adding a printer to the system the summary discharge log can then be printed at the end of each discharge and attached to the manual Oil Record Book, avoiding potentially costly manual entry errors.

SMART ODME TO MEPC 108(49)

APPLICATIONS

- Dirty Ballast Water Discharge
- Clean Ballast Water Discharge
- Bio Fuel Approved
- Easy Installation

The Oil Discharge Monitoring Equipment (Smart ODME) has been designed to provide means of monitoring, recording and controlling the ballast discharge for crude oil, product and chemical tankers including ICE class vessels. This system is modular in construction and does not require the usual pump/motor bulkhead penetration as used on older systems. The Smart ODME includes all components required to meet MEPC 108(49) and the latest MEPC 240(65) for Bio Fuels, effective 1 January 2016.

The Smart ODME incorporates a 'simulation mode' to aid system demonstration to PSC surveyors, is designed for ease of retrofitting, operation, installation and maintenance.

Discharge limits are set at 30 litres of Oil per nautical mile or 1 / 30,000 of the previous cargo for dirty ballast.

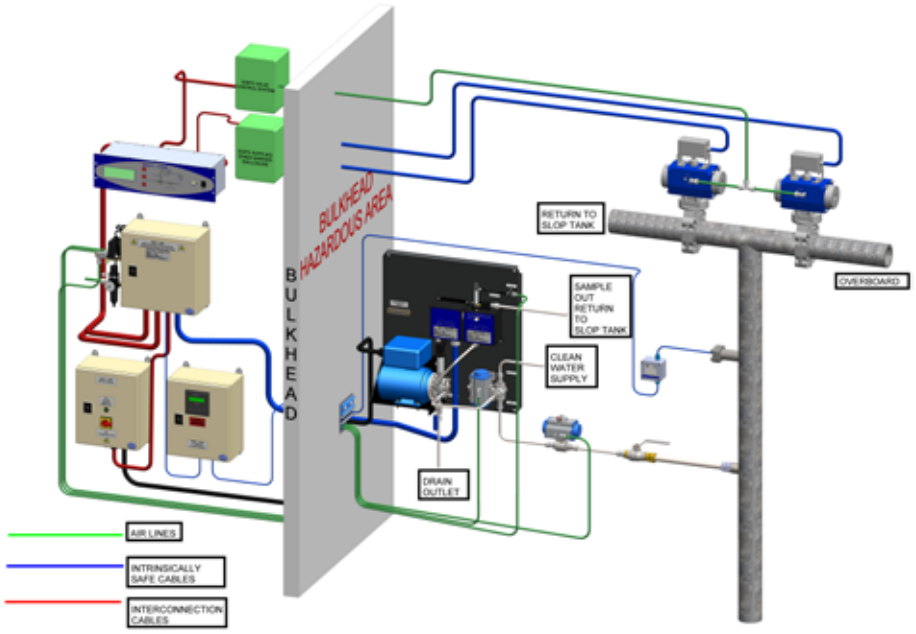
Smart ODME Pump - Measuring Cell

Smart ODME Zener Barrier Module Assembly

SPECIFICATION

MEASUREMENT	
Oil types:	As Per MEPC 108(49) + MEPC 240(65) requirements
Clean water calibration:	Automatic
Oil measurement range:	0 - 1000 ppm all types
Resolution:	1 ppm
Accuracy oil + solids:	As Per MEPC 108(49) requirements
DATA STORAGE AND RETRIEVAL	
Data retrieval:	via LCD display or download to PC using Hyperterminal
SYSTEM AND SUPPLY	
Supply voltage:	115 / 230V ac, 50 - 60Hz (Switchable)
Zener Barrier/Computer Module:	115 / 230V ac, 50 - 60Hz (Switchable)
Motor:	380-440V ac, 50-60Hz, 3 phase, 250W
Supply voltage Consumption:	< 50 VA Single Phase
Approvals:	MEPC 108 (49) - DNV GL, GL + USCG, ABS, CCS, NKK, BV, and Russian Register MEPC 240(65) - DNV GL

Specifications and system descriptions accurate at time of printing. These are subject to change.



SMART 50M OIL IN WATER MONITOR

APPLICATIONS

- Hydrocarbon Leak Detection
- Lube Oil Cooler Monitoring
- Boiler Feed Protection
- Heat Exchanger Leak Detection
- Produced Water Reuse - RO Feed Water, Steam Generator Feed Water
- Industrial Wastewater/Groundwater discharge

A versatile and sophisticated monitor to suit multiple applications in marine and industrial environments. The Smart 50M uses a nephelometry based detection technique and uses sophisticated algorithms to detect Oil and suspended solids in the sample.

The design of the measuring cell allows the monitoring of high temperature and high pressure samples across multiple ranges of Oil Concentration. Auto-Clean and Auto-Zeroing functionality ensures the maintenance is minimal and that the measuring cell is kept free from fouling.

The Smart 50M can provide the Oil Concentration value to a DCS or PLC using a 4-20mA output and additional process variables can also be provided using the Modbus digital communications protocol (over RS485).

As standard the following data is available:

- Oil Concentration
- Sample Pressure
- Sample Temperature
- Solids Content
- Fault Status
- Alarm and Run states

Conductivity, pH and Dissolved Oxygen can also be monitored by incorporating the Auxiliary Inputs Assembly. We are also able to build this as an "Exd" type system in a protective enclosure for Hazardous Environments.

SPECIFICATION

Ranges:	Low range 0.1 - 10 ppm Medium range 1 - 200 ppm High range 1 - 5000 ppm
Accuracy:	Low range +/- 0.15 ppm Medium range +/- 5 ppm High range +/- 200 ppm
Alarm 1 Operating Point:	Low range 0.1 - 10 ppm Medium range 1 - 200 ppm High range 1 - 5000 ppm
Alarm 2 Operating Point:	Low range 0.1 - 10 ppm Medium range 1 - 200 ppm High range 1 - 5000 ppm
Alarm 1 Operating Delay:	1 - 15 seconds
Alarm 2 Operating Delay:	1 - 600 seconds
Alarm contact rating:	8 AMP @230VAC
Output signal:	4-20 mA, Modus over RS485, 4-20 mA with HART
Ambient temperature:	1-60 °C / 34 – 122 F
Humidity:	Max 98% non condensing
Sample temperature:	1 - 95 °C / 34-203 F
Sample Flow:	0.3 - 3 Ltrs per min / 0.079 - 0.79 Gal per min
Sample Pressure:	0.5 – 10 Bar / 7.25 – 145 Psi
Clean Water requirements:	0.3 - 3L per min / 0.079 - 0.79 Gal per min for ‘zeroing’
Weight:	15kg / 33.07 lb
Size:	500 x 360 x 150mm / 19.7” x 14.2” x 5.9”
Supply voltage:	115 - 230 VAC
Power consumption:	15 VA
Degree of Protection: Approvals (pending):	IP56 Tested to EN61010 EN61326 (CE), c UL us.

Specifications and system descriptions accurate at time of printing. These are subject to change.

HISTORY

In the early years the initial Rivertrace product range comprised two 15ppm oily water separator monitors, our OCD1 and OCD2 models. These were later joined by the highly sensitive and successful OCD50 series for boiler condensate monitoring.

1983

1989

In 1989 the company expanded into the offshore industry, producing a range of custom-made oil-in-water analysers for a variety of applications. As a result we quickly became a leading supplier to North Sea oilfield operators.

In 1994 the OCD1 and OCD2 were superseded by the OCD1M and OCD2M models. These in turn were replaced by the OCD CM in response to the introduction of IMO resolution MEPC 60(33) in 2000. In 2004 the "Smart-Bilge" monitor was designed and launched to comply with the new IMO resolution MEPC 107 (49) applicable from the 1st January 2005.

1994

As a result of the changes in IMO regulations and the introduction of MEPC 108 (49) – also applicable from 1st January 2005 – a new 'Smart ODME' design was introduced featuring advanced measuring principles.

2005

1995

In the early 1990s we received numerous requests for oil discharge monitoring systems from clients who thought that existing designs had room for improvement. In conjunction with our customers we drew up the specification for a new ODM that could not only meet IMO regulations, but still improve on the performance of equipment available at that time. The Rivertrace Oil Discharge Monitor OCD10M was launched in late 1995.

TODAY

Today the company employs approximately 25 people at our 10,000 sq. ft. factory close to Redhill, 20 miles south of central London. Our global network of agents ensures local service and support worldwide.

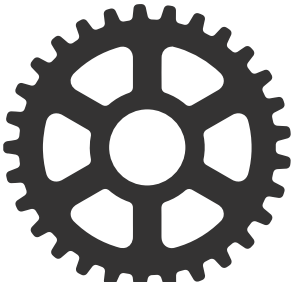
Today we are at the forefront of designing systems that not only meet but go beyond the requirements of tightening environmental legislation. With the introduction of the SmartSafe Bilge Overboard Security System we are continuing to meet new environmental challenges head on.

SUPPORT

Tech Support

Rivertrace is committed to providing exceptional customer service which includes aftersales care. Should you require technical support with any of our products, please contact us via the email address below.

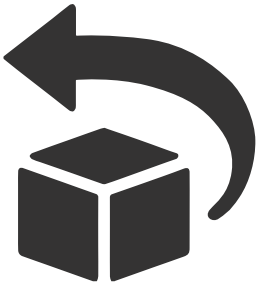
technical@rivertrace.com



Spares Enquiry

If you wish to purchase or make an enquiry about spares, please submit details to the email address below. A member of our dedicated sales team will respond with a list of spares, current costs and lead times.

sales@rivertrace.com



Returns

Our procedure to manage returns, repairs, and replacements ensure turnaround times are as short as possible.

To receive a copy of the Rivertrace returns policy please contact the email address below:

service@rivertrace.com

ACCREDITATIONS



Rivertrace Limited
Unit P, Kingsfield Business Centre
Philanthropic Road
Redhill Surrey
RH1 4DP England

Tel: +44 (0)1737 775500
Fax: +44 (0)01737 775501
email: sales@rivertrace.com
email: service@rivertrace.com
www.rivertrace.com