



System Exclusively Eliminates Electrolysis Corrosion.

Registered trade mark of:

Podean Electronic Industries Pty Ltd.

*Service, Research, Design and Manufacturing of Specialised Electronics.
Workplace Agreement incorporating Quality Assurance to ISO9001.*

How To Stop Corrosion, permanently - Training Course.

This document is best viewed on a Laptop or Desktop PC and will print.

Link to [Home page](#).

Stray current is the cause of 98% of all corrosion. It is powered by Direct Current (DC as in batteries). It dissolves your hull and engine and the metal under coatings and plating so causing them to lift off the metal. When stray current is eliminated the anodes, coatings and plating can work as designed.

Technical explanation (easily understood)

SeaBis Master System eliminates the CAUSE of stray current sometimes termed electrolysis..

Rust, stray current, electrolytic action, marina corrosion, boat corrosion and galvanic are all common terms.

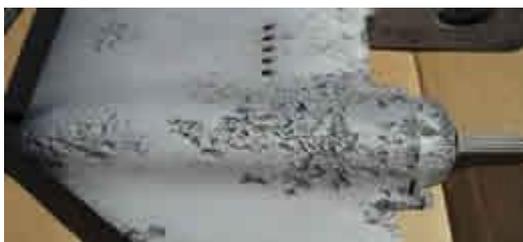
Rust is simply air carried current often vastly accelerated by stray current.

Galvanic is an entirely different process. It is caused by two different metals being in proximity in a conductor such as water. Galvanic is a million times slower than stray current corrosion. Anodes, when stray current corrosion is eliminated, will stop galvanic and should last 3 to 4 years. If they do not then stray current is the cause.

Stray Current Corrosion



Stray current dissolves your metal



Stray current corrosion to engine leg in 14 days

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Stray current corrosion is caused by wiring or equipment defects onboard your vessel. I witness stray current destroy commercial propellers and a hull in 10 days, many times every year. It is current flowing from your vessel to the Earth. This is where SeaBis pays for itself, very quickly. SeaBis System eliminates that stray current CAUSE. So saving you many thousands dollars.

The stray current thru electrolytic action creates stray current corrosion. So the original marine corrosion cause is your vessel creating stray current. If you need additional clarification contact us.

The reason we provide an 8 year money back guarantee is we are 100% correct. How To Stop Metal Corrosion instructions must be complied with.

8 year money back guarantee
8 years free training and 30 minutes diagnostic support
Testimonials with verification

•**External reference**, proof we are correct, DC (batteries) cause metal corrosion. Note DC power – red and black leads on apparatus, not AC(mains or shore), reference: [Wikipedia stray current commonly termed stray current](#).

•**Intention**: To assist you. Comments are welcome. Please feel free to email me [contact Glen Bishop](#). Phone numbers on the last page.

•**Method**: The Truth Will Set Us Free. We supply support and feedback. We close the circle. Make ALL the cause/s visible so we can eliminate them.

My stray current knowledge started in year 1962 with my attempt to qualify for the next stage of my training. I was a tender 19 year old, had joined the Royal Navy 6 months previously and was determined to improve my prospects. I volunteered for a 3 month duty on HMS Venus. A warship – type 14 frigate and intended for training potential seamen. These were DC ships. DC – direct current – it flows in one direction only. That causes particles of metal to be permanently dissolved to the Earth via the sea.

My duty on-board HMS Venus was very specific: To test the insulation of ALL the DC supply to all equipment. There was no live testing equipment, as SeaBis is now some 55 years later, so we had to remove power, disconnect the equipment being powered and insulation test. It was a compromise done in writing, signed and witnessed. My neck was on the chopping block. I still have my head.

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Today we test and eliminate all causes on ENTIRE vessels.

There is no compromise. We are accurate to 10 millionths of an amp (reference Ohms Law explanation on page 12). That is why we provide an 8 year money back guarantee. How To Stop Metal Corrosion must be complied with.

So the cause of stray current has been well known since prior to 1962. So why is it prevalent now? The same reason as profit in spare parts is vastly greater than whole equipment. We will correct this situation. The correction will be visible to you, permanent and at low cost.

•SeaBis Master:

1: Is an industrial grade mini-computer with 20 years life. It is the simplest and most direct way to eliminate marine corrosion. You do not need a Blocker when you use SeaBis Master System.

2: SeaBis Master fitted with battery clips and How to Stop Metal Corrosion will eliminate permanent stray current. Intermittent stray current (moisture, equipment or wiring failure) requires SeaBis be permanently installed. So if you decide to use one SeaBis Master fitted with battery clips then every battery bank must be interrogated by SeaBis Master at a maximum interval of 10 days. I have known several pairs of \$5,000 propellers destroyed in 10 days. Then Galvanic corrosion is easy to eliminate with anodes.

3: We will not be responsible for failure to permanently monitor all batteries or DC sources with SeaBis Master or failure to comply with How To Stop Metal Corrosion.

LEDs explanation on next page.

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•SeaBis Master LEDs explanation:

GREEN you are absolutely safe from stray current causing corrosion

AMBER very small amount of low level current causing minor corrosion

RED serious (LED lit solid not flashing) high current causing stray current is present. Corrosion visible within 6 months

RED FLASHING extreme large current causing visible corrosion within 3 months. Two \$5,000 propellers destroyed in 10 days

AC Only RED FLASHING warns you of excessive AC in your DC. That AC halves your battery life, kills electronics and vastly increases the risk of electrocution. The cause is usually shore / mains neutral and active reversed or a cheap inverter mains or 12 to 24 volts, regulator, alternator or generator. Diagnosis is exactly same as stray current elimination

ALL battery positive red LEDs can be caused by a fire risk - contact us immediately. If you have both 12 and 24 volts there will be very accelerated corrosion and increased fire risk.

Marine stray current elimination procedure as booklet supplied with SeaBis: how to stop corrosion

Connect SeaBis brown to battery positive. Blue to battery negative. Green / yellow to hull if metal otherwise the engine body / metal. Connections must be to clean metal with no paint or grease as those will stop SeaBis working.

Assuming the bottom right light, battery negative, flashes: find the brass connection strip that joins all the battery negatives together. Disconnect one wire at a time until SeaBis Normal light is green.

The last wire you disconnected was causing stray current corrosion.

Reconnect all those NOT causing stray current.

Leave the wire causing stray current disconnected.

The equipment causing stray current now has no power so is easily identified.

AC Only LED flashes: The cause is usually shore / mains neutral and active reversed or a cheap inverter or alternator or generator. Diagnosis is exactly same as stray current elimination.

Follow booklet supplied with SeaBis: how to stop corrosion.

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• Procedure to identify then repair CAUSE of stray current, simple boats:

Connect SeaBis Master brown to battery positive, blue to battery negative, green / yellow to metal hull / enclosure or metal of engine. The SeaBis Master **Traffic Light System** that will instantly indicate the level of stray current. Unplug or disconnect wires until SeaBis indicates Normal, the last thing you disconnected was the cause. Reconnect all wires that indicate Normal. Leaving disconnected all that cause other than Normal. Now see what has no power and you will know the cause. Now follow How To Stop Metal Corrosion and / or contact us to repair / replace the cause. Follow How to Stop Metal Corrosion to repair / replace the cause. If you get any problems contact me: [email Glen Bishop](mailto:Glen.Bishop@podean.com.au)

• Procedure to identify then repair CAUSE of stray current where engine ON hours exceed 200 per year - (Commercial use vessels)

Diagnostic Procedure:

1: Disconnect engines and connect SeaBis to House. Prove the House has no stray current as it and engines are electrically in parallel: Reason: If A and B are faults, you remove A and warning persists, so you put A back on and remove B so you never find the cause. Correct procedure: Keep taking wires off until you have Normal. If Normal then proceed with engines. If other than Normal diagnose the House and repair. Then proceed with engines.

Diagnosis procedure: Keep taking wires off until you have Normal. From Normal: Touch test each wire in turn. Leave disconnected all that cause other than Normal. Reconnect all that cause Normal. On completion you will have 1 to 4 wires, now disconnected that were all causing stray current. Now see what does not work (as it now has no power) and repair / replace it.

2: Engines. Look for and record all connections from battery negative to body of engine. Detail the equipment those connections connect to. Replace incorrectly insulated sensors: Sensors available at:

A.S.A.P. Supplies in U.K. link: [ASAP-UK](http://www.asap-uk.com) sells Teddington senders and switches all PROVEN correctly insulated battery negative for the engine.

To get thread exactly correct use a link: [Thread Gauge](http://www.threadgauge.com) from Fastener Retailer.

Arrange starter motor and alternator battery negative insulation from their metal body by

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Automotive starter motor and alternator re-winder. Obtain wire and crimps to replace the connections that used to be made by engine body.

If you have any difficulty we will talk you through entire vessel full insulation. Any difficulties contact me: [email Glen Bishop](mailto:Glen.Bishop@podean.com.au)

Australia +61

Mobile (cell) (0)417 878 773

Alternating Current - (AC) mains or shore or inverter power:

Cannot cause stray current as it reverses direction every $\frac{1}{2}$ a Hertz (Cycle) or every 1/100 second. IF AC could take off a particle of metal in the first $\frac{1}{2}$ Hertz it will put it back on when current reverses direction in the next $\frac{1}{2}$ Hertz or 1/100 second. Reference [Does AC \(Inverter, shore or Mains power\) cause stray current](#)

DC in shore power AC? Please read the compliance plate on your kettle. There will be no DC compliance. IF there were DC in AC then there would be no Back EMF (Counter Electromotive Force) so every appliance would attempt to draw an infinite current and burn out within a few seconds – every appliance in the World burning out in a few seconds... Reference [Wikipedia - Is there DC in AC?](#)

There are variables to one SeaBis per independent battery bank:

1: One SeaBis Master will eliminate all PERMANENT CAUSES of stray current. It may be fitted with battery clips and moved between battery banks. However that may not eliminate intermittent or new causes and stray current will occur without your knowledge, sometimes in 10 days.

2: To comply with How To Stop Metal Corrosion and validate our guarantee and warranty SeaBis must be permanently installed, one to each *independent battery bank. Explanation: Every battery is a source of stray current. So permanently install one SeaBis per *independent battery bank / DC source (including regulators, reducers and DC generated from AC).

*independent - All DC sources must be monitored by SeaBis more than 97% of ALL time to eliminate 97% of all causes. Parallel (joined together) battery banks - parallel sources of DC are actually one source. Parallel battery banks require only one SeaBis. Solution: Allow SeaBis to do

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its job by permanently connecting to every independent battery bank and DC source! If you have 12 and 24 volts then ALL DC sources must be permanently fitted with SeaBis Master - there will be 3 times the stray current probability, capability and severity.

Then you will comply with ABYC international marine Wiring Rules. Insurance then cannot use non compliance as an excuse to refuse payment. Contact us and we will email them to you.

3: Time away from your vessel is excluded as we will take steps to ensure there is no stray current while you are absent - see How To Stop Metal Corrosion and/or contact us with SeaBis Master results.

4: Equipment you cannot turn off is treated separately. That absolutely minimizes the risk. Solution: Contact us with SeaBis Master results.

5: As always, we will support you. However for our 8 year guarantee and warranty to be valid you must comply with How To Stop Metal Corrosion, supplied with SeaBis. Then ALL CAUSES of stray current will be eliminated.

6: Support. Training and 30 minutes diagnostic support are free with SeaBis Master System.

•Stray current corrosion is caused by electrical current, not voltage:

Explanation. Assuming you are sitting at your desk and the light is on. The element in the lamp is slowly dissipating (corroding) in the same manner as your installation / hull / engine / propeller. You grab a rag, and with the light still turned on, you remove the lamp. The lamp goes out and the element ceases to dissipate. The power to the lamp socket: 110 or 240 volts, is still applied. The current through the lamp element has ceased.

There is no point in measuring voltage – it has not changed. Measuring current would immediately show the element dissipation has ceased. The SeaBis System measures current through the metal being dissipated, your propeller, engine or hull. Only SeaBis measures current directly. All other methods measure voltage. How To Stop Metal Corrosion identifies the cause and provides sample methods of repair. Advice is free: [email Glen Bishop](mailto:seabisbg@gmail.com)

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•Why 97 or 98% stray current CAUSE elimination? Please explain:

Stray current is multiplied by the time it flows. I have personally seen vessels with two \$5,000 propellers (plus slipping fee) dissolved beyond repair in 10 days, 8 times in 10 years. I know of vessels sunk by stray current corrosion.

In a non commercial situation the DC negative can be disconnected by a correctly modified solenoid at least 97% of the time. Non commercial engine/s ON hours are less than 200 per year. So stray current is eliminated at least 97% of the time, by the solenoid. Calculation $(200/(365*24))*100\% = 97\%$.

In a commercial situation ALL CAUSES are eliminated permanently. So we achieve 100% CAUSE elimination, permanently. Details including suppliers in booklet supplied with SeaBis Master: How To Stop Metal Corrosion or by emailing [Glen Bishop](#) - with SeaBis Master results.

When we apply a commercial solution we assume the CAUSE is cumulatively connected more than 200 hours per year. That cause is normally the DC negative.

“AC - shore power causes stray current”.

•Very very unlikely:

Stray current corrosion is caused by electrolytic action between damp or immersed metal or cooling system via any damp to wet contact to the Earth (damp tires included). Electrolytic action is particles of metal being dissolved from your metal by DC - battery current. DC is Direct Current and always flows in the same direction. AC (Mains power) is Alternating Current that reverses direction every half cycle (Hertz or 1 divided by 50 or 60 of a second) so dissolved particles will be replaced every half Hertz. So AC cannot cause stray current corrosion. All stray current is eliminated by the SeaBis System under actual live use conditions - 8 year money back guarantee. Testimonials with verification.

In doubt? Ask any manufacturing jeweler how he plates gold onto base metal. The gold is your (engine / hull) damp / wet metal and the (jewelry) base metal is the Earth.

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“Anodes will stop stray current”.

Even more unlikely:

A one kilogram anode produces one micro amp or one millionth of an amp, of protective current. Stray current is commonly greater than 0.1 milli amp (1 / 10,000 amp) too several amps of current. So we would need a lot more than 1,000 kilograms of anode! I have personally measured 9 amps caused by a commercial VHF Transceiver with a 9 amp power supply - that would require 9,000 kilo grams of Anode. It is much easier to stop the stray current.

SeaBis Master System eliminates ALL stray current, permanently, without thru hull penetration or additional coatings or plating. When stray current cause is proven to be eliminated by SeaBis, anodes will stop galvanic corrosion.

“Stopping stray current is too hard”

Only for those who make a living repairing stray current corrosion. 25+ years ago stray current barely existed because marine equipment was correctly manufactured. Today, larger tugs, military vessels, professional vehicles, some train / signals and larger aircraft do not experience stray current because they are correctly manufactured. Most experienced Professional Fishermen whose family have been in the trade for generations know what **not** to buy. Use SeaBis to prove new equipment does not cause stray current.

•Stray current causes:

•These are probable causes:

Please consider there were very few stray current problems 25+ years ago. The equipment was very much the same. So what has changed? Also consider there is far more profit in spare parts than whole equipment. We will correct this design situation.

Amongst all the causes are planned redundancy causing purchase of expensive parts, new equipment, moisture, cooling system, failing insulation, antenna damage and carbon brushes as in all motors, generators and alternators. We will eliminate ALL causes of stray current by using the SeaBis System. We will measure the stray current, irrespective of the cause **while fully**

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powered and with very good accuracy and totally reliability without disturbing the circuit in any way. We will use the SeaBis System because it is totally accurate and reliable.

Whereas a multi meter must cause a circuit disturbance and vast inaccuracy: for a \$500 multi meter an inaccuracy of at least 2,000 to 1. Using a multi meter you will have one chance in greater than 2,000 of any accuracy whatsoever. To prove it to yourself:

• Prove a Multi-meter cannot tell you the truth using 2 Multi-meters:

So as not to confuse them, take the battery out of multi meter A and switch it to milli amps. Put the multi meter B on ohms and measure the multi meter A milli amps range resistance (at milliamp and Common terminals). You will find 200 to 2,000 Ohms.

Compare that to the cause of stray current - electrical short circuits of less than 1 Ohm. Those shorts connect battery negative to hull/engine body so causing stray current. If you use a multi meter your chance of success at best is 1 divided by 200 (for a \$1,500 combination meter) or at worst 1 divided by at least 2,000 (for most multi meters). A failure rate exceeding 1,000 to a success rate of 1. A multi meter has unacceptable odds and they get worse - next paragraph. Use SeaBis: It is accurate and safe.

If you use a multi meter you are measuring voltage developed across a resistor connected in series. Not only of no use but confusing and potentially lethal:

Add the risk of battery explosion because of explosive gazes. Batteries generate hydrogen gas. That is the smallest particle of everything and will permeate everything. The Zeppelins were filled with hydrogen gas they all exploded in flames.

•All causes are electrically in parallel - the solution to locate the causes.

When, as is common, there is more than one cause, they are in parallel. So if A and B are causes and A is disconnected, B will continue causing stray current. If you then think "well, A was not the cause so I will reconnect A and disconnect B..." then you will never eliminate the cause. So the correct procedure is to disconnect connections / double pole until SeaBis indicates **Normal** or **Caution** then momentarily connect or touch on one circuit at a time to test it. Watch SeaBis respond.

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- The same principle applies to diagnosis: Always disconnect until you have a **Normal** then momentarily connect one circuit at a time to test it. If it causes stray current disconnect it and label it stray current and then you have Normal again so test the next. Any that do not cause stray current (SeaBis stays on Normal) should be reconnected.

Caution LED: Is caused by an extremely low level of stray current. Corrosion may just be visible in a year. Common causes are a very small fall in insulation / very small coolant leakage in a sensor, poorly designed electronics such as in energy sensors in radars. It is eliminated in exactly the same manner.

The areas affected worse are those with increased temperature (headers) and softer metal such as radiators; and hulls and propellers. The water in the top 300 milli meter adjacent to the hull is always warmer than that deeper under water so carries most of the stray current. The air also carries stray current wherever Relative Humidity is greater than 10%. (humor - Gobi Desert has greater than 10% occasionally).

•Explanation - why does stray current occur?

1: Using Kelvin's Absolute Law of Measurement:

The battery negative terminal is actually at minus 12 volts and battery positive at 0 volts. The Earth voltage is positive 1 point 2. Any dew / moisture / water is a very good conductor. So when there is a circuit from battery negative to hull / engine / installation negatively charged electrons are repelled from the damp / wet metal to the Earth. They carry your metal with them to the Earth.

From Science class: Remember the 2 bar magnets that repelled each other? Like poles (polarities) repel. Electrons drive your metal to Earth via sea, land and air.

2: Explanation:

All DC (battery or AC sourced power) returns 80% or more of the current drawn through the battery positive to the battery through the battery negative. That is why the battery negative cable has the same copper diameter as the battery positive cable.

So a starter motor on a medium 4 cylinder diesel drawing 180 amps will return 180*(multiplied by) 0.8=144 amps to the battery via the battery negative cable. If the metal hull or engine body is used or connected to the battery negative a proportion from 100 to 144 will flow through the

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hull. On a large diesel that current will be 360 amps. The alternator charges at 50 to 100 amps and the same percentages apply. A single deck flood light will draw 20 amps. A winch 80 to 300 amps.

Some blame the live well: A live well is connected to engine / hull by either welding or the water. On a fiberglass hull it is connected to the engine via the water. (Remember the James Bond movie where he throws a bar heater into a bath and electrocutes the person in the bath). Fresh or salt water is only a few ohms, usually around 10 ohms per meter so everything touching water is connected together.

Quote: "I have seen sophisticated systems where the (live well) water is both circulated and aerated. While other are simpler by simply getting filled with water and emptied." Where that water never makes any contact with metal or the sea that **might** work. Far better to use SeaBis to eliminate the cause and protect the engine / live well / gearbox and propeller. I have seen \$20,000 gearboxes destroyed in 6 months – on Turkish warships. The Manager was an ex submarine Captain and bought SeaBis out of his own pocket as it was not in the build contract.

On fiberglass boats the same current flows thru the propeller thru gearbox then the cooling system. The accelerated flow rate in the cooling pump amplifies the stray current effect. The cause is the circuit through it and the engine to the Earth, attracting current – (expensive-your fuel generates it) from your vessels metal to the Earth.

Those amps (current to the Earth) consist of negatively charge electrons. The Earth is at positive 1.1 to 1.2 volts so attracts some of that current. We need one thousandths of an amp to cause stray current you can see in 3 months. (never try to measure this will a multi meter. Death by battery acid explosion may occur. In addition the reading, is very likely to be 200 to 2000 (internal resistance of multi meter on milli amps range) times in error.

Your knowledge now far exceeds the normal. SeaBis Master will prove the above. There are the methods I started with – a current limiting 12 and 24 volt power supply, that will also prove it. The Testimonials at seabis.com are all verifiable. 8 year money back guarantee also at seabis.com.

•How do I test SeaBis?

By generating stray current. Never carry out this test if SeaBis indicates other than **Normal**.

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1: Prove there is no defect by connecting SeaBis Master: Brown to battery positive, blue to battery negative and Current Sense (green / yellow) to metal hull / enclosure or engine body. Ensuring there is a good clean electrical connection with no moisture, oil, paint or corrosion (if so file it off). SeaBis MUST indicate Normal. Only proceed if you have Normal.

2. Using very thin insulated wire, connect battery negative to Current Sense - green / yellow. SeaBis will receive stray current and indicate Critical negative. Disconnect the wire and SeaBis will indicate Normal. Proving SeaBis correct.

•Ohms Law; the only electrical law you need to know:

I (current in amps) = V (voltage in volts) / (divided by) R (resistance in ohms)

* is multiplication sign

/ is divide by sign

To transpose the formula:

Replace letters with numbers

$4 = 8 /$ (divided by) 2

so

$8 = 4$ *(multiplied by) 2 so $V = I * R$

so

$2 = 8 / 4$ so $R = V / I$

That's it. Unless you want Watts(heat or energy) = $I * V$

Ohms Law graphic on the next page. It will make understanding easier,

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The Formula Wheel

Using this formula wheel it is possible to calculate power, volts, amps or resistance for a given problem. ie. if you have two of the variables, for example power and volts, it is possible to find the amps in a circuit. This wheel expresses volts as V, however, in old text books you may see volts shown as E.

POWER (Watts)
This formula is used in many situations, from calculating the wattage of a resistor, to working out if an appliance will overload a particular power source.

Power = **Current** x **Voltage**

$$P = I \times V$$

Where: V = Volts, I = Amps

A useful variation of this formula is :-

$$P = I^2 \times R$$

OHMS LAW
Ohms law is undoubtedly the most commonly used formula in electronics today. It defines the relationship between voltage, current and resistance. Its uses vary from calculating the value of a resistor to protect a LED (Light Emitting Diode) from destruction when run on a higher voltage supply than recommended, to calculating the current that a heater element will draw.

Voltage = **Current** x **Resistance**

$$V = I \times R$$

Where: V = Volts, I = Amps, R = Resistance

•How do I wire up my Boat?

Non compliance to ABYC Wiring Rules is used to remove Insurance Companies liability. Comply and you remove that excuse to deny liability. I talk to Owners who have just paid 50% to 90% of the value of their vessel in repairs caused by stray current. Totally preventable - follow ABYC Wiring Rules and check there are no faults in your vessel with SeaBis Master. A profit driven manufacturer has published their own ABYC Rules.

ABYC Wiring Rules must be complied with to eliminate the cause of stray current (metal corrosion) and so your insurance is valid. ABYC mandate a 3 wire system: battery positive, battery negative and Bonding. No battery connection must make electrical contact with Bonding. If you chose not to eliminate stray current you will have no insurance from stray current corrosion.

ABYC Wiring Rules are recognized by all authorities, World-wide as pre - eminent, correct and legally binding. They will be used to void insurance where there is non compliance.

•What is rust and galvanic corrosion versus stray current?

Rust is caused by moisture in the air allowing electric current to flow from the metal to the Earth via the air causing the metal to dissipate. Air is a poor conductor of electricity so the process is very slow.

Phone: Australia 61 (0)417 878 773 Email: seabisbg@gmail.com
 Skype: seabis1 Web: www.seabis.com

3 Arabian Court, Hindmarsh Valley, South Australia 5211. Podean Electronic Industries Pty Ltd.
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System Exclusively Eliminates Electrolysis Corrosion.

Registered trade mark of:

Podean Electronic Industries Pty Ltd.

*Service, Research, Design and Manufacturing of Specialised Electronics.
Workplace Agreement incorporating Quality Assurance to ISO9001.*

Galvanic corrosion: Metals have natural voltages so different metals have different voltages. The maximum difference possible being 1.2 volts (one point two volts) so galvanic corrosion is equally slow. When SeaBis Master proves there is no stray current then anodes and bonding will stop galvanic corrosion.

Stray current is at least a million times stronger than galvanic. You are connected by the water to the Earth and every vessel within at least 180 meters. SeaBis Master System eliminates ALL CAUSES of stray current. Permanently and forever. You are disconnected (insulated) from the World so no current can flow. How to Stop Metal Corrosion must be complied with.

Stray current corrosion is man-made. The SeaBis System eliminates all stray current, no matter what the cause. Then anodes, coatings and plating can work as designed. That is why we offer an 8 year money back guarantee. The guarantee or warranty has never been claimed in 10 years with greater than 1,000 vessels.

•How do I know you are correct?

See Testimonials with verification for 18+ years of testimonials with verification - contact them. In addition, I know of no other stray current elimination product with an 8 year, publicly available written money back guarantee and warranty. We provide an 8 year guarantee because we know we are 100% correct.

•Bonding question:

" Should the fuel tank bonding as well as all other outer hull and thru hull mounted metal be connected to all metal, not the DC system?" •Yes. The Bonding connects all metal that can get damp to wet so reducing the inter-metal natural voltage so reducing galvanic corrosion. NEVER connect bonding or any metal that can get damp or wet to any DC as that will cause accelerated stray current. NEVER connect DC negative to fuel tanks - you will pass 80% of total current through the tank and its content - that has caused death by fuel explosion. The Bonding system is never connected to AC or DC whatsoever.

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•AC, Mains or shore power, question:

I am unqualified to offer advice. Get an A Class Electrician to do a SAFETY CHECK on AC! He must be on site and issue a Complying Certificate. I believe the Inverter AC Earth should connect to the Mains Earth but not the hull. The Inverter AC MUST be Open Circuit to all DC. It MUST NOT fire AC back into the battery - that will cause battery failure, electrocution risk and kill electronics. Ignoring AC Only LED flashing will cause very expensive damage and void your guarantee.

•How do I use SeaBis with multiple battery installations?

Where the battery banks can be connected in parallel (connected together), usually for charging and reserve energy, use one SeaBis Master connected to the House bank and parallel all banks at least 97% of cumulative time. When the other banks are switched in circuit SeaBis will automatically interrogate them. If they cannot be connected in parallel there are two choices:

1: This procedure will eliminate all permanent causes but battery bank monitored time per will not be adequate to eliminate intermittent or new causes: Fit battery clips to SeaBis Master and move it between battery banks. That will identify stray current present at the time of monitoring, only. This procedure will severely limit or void guarantee and warranty. We will not be responsible at all when batteries are inadequately monitored.

2: When you want 100% elimination of stray current then permanently connect one SeaBis per battery bank and treat as commercial use with engine ON hours greater than 200 per year. Then you will get 100% elimination of ALL stray current, permanently and our Guarantee and Warranty will apply.

Remember: If you monitor all battery banks less than 97% of total time there is a proportional or greater risk of ongoing stray current without your knowledge. SeaBis can only monitor the circuit it is connected to. So if you breach the 97% for more than 10 cumulative days in a year our guarantee and warranty are limited to 10 days - the time for unmonitored stray current to be visible.

Where the battery banks cannot be connected together, and for all vessels using 12 and 24 dual power supply vessels, a SeaBis Master MUST be permanently connected to EVERY battery bank. Failure to do so will cause stray current and void guarantee and warranty. Rig / Platform

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and some industrial or ship installations, may need special actions, depending on SeaBis Master results: [Email Glen Bishop](mailto:Glen.Bishop@podean.com.au) or phone +61 (0)417 878 773. We can set up a free World-wide audio / video link via Skype: seabis1.

If you use one SeaBis and move it battery bank to battery bank or use a switch to select or parallel battery banks there are risks of stray current and very expensive corrosion. Some get away without excessive corrosion. Some forget or wire incorrectly causing 1% to pay 90% to 95% of the value of their vessel in repairs when batteries are unmonitored for a CUMULATIVE time of greater than 200 hours (10 days) on one year.

•100% absolute method

Permanently install one SeaBis per battery bank. This is the only method to obtain 100% and permanent protection. SeaBis will instantly alert you should ANY stray current occur. Then our Guarantee & Warranty apply.

•My Rig/Platform/boat/industry has more than 5 battery banks, can you assist?

Yes. The cause/s are permanently eliminated by the SeaBis System. Contact: [email Glen Bishop](mailto:Glen.Bishop@podean.com.au) or phone +61 (0)417 878 773. We can set up a World-wide audio / video link via Skype: seabis1.

•I or my Technician uses a multimeter, we have problem:

The use of a multi meter cannot find the cause. It will waste your time and money and risk your life while stray current corrosion will continue.

Using a multi meter on any current range not only cannot find the cause but is also taking an immediate risk of causing death by battery explosion. Never use a multi meter on milli amp or amp ranges near a battery.

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Using a multi meter on ohms cannot eliminate stray current. The multi meter uses one volt (even if it has a 9 volt battery) at one millionth of an amp. It will waste your time and money while stray current corrosion will continue.

•Training and 30 minutes diagnostic support free

E-mail: seabisbg@gmail.com

Skype name: seabis1

Free computer to computer: [Download Skype](#)

Phone: Australia 61

Office or mobile (cell) (0)417 878 773

Best regards,
Glen Bishop RN rtd. Assoc. Eng. IREE

Podean Electronic Industries trading as SeaBis - registered trade mark.

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