Airlink isolation transformer

230V shoreline connections were once rare in narrowboats. Today, it's hard to buy a boat without one. Take a walk around any marina and you'll see dozens of power leads trailing from boat to land – whether running a washing machine, powering a desktop computer, or simply keeping the batteries topped up.

But around 10 years ago, several boaters noticed that their expensive hulls were corroding rather more rapidly than they would like – and the common factor was the shoreline.

There has always been some electrical current flowing through the water between boats moored nearby, but only a little. The resulting corrosion was easily managed by occasionally renewing your sacrificial anodes.

Introducing the 230V shoreline, however, changes the picture. Now, the earth cable in each shoreline completes an electrical circuit with the existing current through the water – and the result is greatly accelerated corrosion. Your anodes will protect against this, but only briefly; in extreme cases, anodes have been reported to dissolve completely after three months.

One popular answer is the inexpensive galvanic isolator, fitted inline to the earth on your boat. It breaks the earth connection for the small (under 1V) galvanic currents that would cause corrosion, only reconnecting for significant currents.

If you only use simple 240v electrical equipment on your boat – kettle, immersion heater, and so on – then this is all you need. However, more complex equipment (such as computers and washing machines) now typically includes switch-mode power supplies, which 'leak' small currents to earth to avoid creating radio interference. These could potentially flow through the galvanic isolator, bypassing the protection.

If you have much equipment like this, you might want to consider the alternative: an isolation transformer. These units transfer a 230V current from one circuit (the shore supply) to another (the boat), without creating a circuit between the two; instead, like any transformer, it is passed magnetically. As a result, the "circuit through the water" never gets made.

Though isolation transformers provide peace of mind, they are much bulkier and heavier than a compact galvanic isolator, and significantly more expensive. A galvanic isolator can cost under £100; a transformer several times that. For example, the well-respected and reliable 3600W unit from Victron is around £600. Mastervolt's 'Mass GI' unit, exceptionally light and quiet, is more expensive still.

Industrial supplier Airlink Transformers does not actively market their products to the inland waterways, but has now begun to produce a suitable unit at the suggestion of a boater. Very keenly priced, it is now finding a home on a growing number of boats.

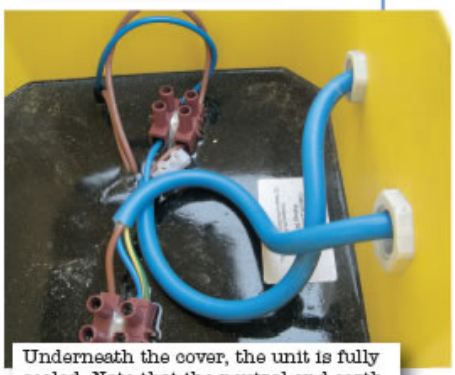
The Airlink WP3230 is a 3600W unit, giving it enough power for a typical narrowboat connection to a 16A shoreline. But several other features of its design make it especially relevant. It is fully waterproof, and potted in a plastic, not metal casing, so it can be left either on the bank or on your boat. (This is a heavy unit at 35kg, so unless you need extra ballast for your boat, the bank may be more sensible.)

For safety reasons, it is absolutely essential that you have an RCD on the boat, but most modern boats will have one installed already. The transformer is double-insulated so will never come into contact with the hull.

We have had one running on our boat for several months. It makes a quiet but audible humming noise when in use, which may be annoying if you have a rear bedroom and (as we initially did) you place the Airlink on the back deck. Its "soft start" means it is less likely to trip out the shore supply when connected, and indeed we have never had a problem here.

And does it work? We recently renewed our anodes; the previous set had largely worn out before we purchased the Airlink. So far, the new set appears to be holding up well, despite the boat remaining connected to the shoreline.

The Airlink is waterproof so can be kept outside.



Underneath the cover, the unit is fully sealed. Note that the neutral and earth from the boat are wired together.

When we bought our unit, the case was entirely undrilled with the connectors loose inside, so we played safe and asked our boatyard's electrical specialist to wire it up for us, adding a little extra to the cost. There are no instructions supplied: the important thing to know is that the secondary (boat) neutral and earth should both be wired to the neutral terminal of the transformer, while no earth connection is required on the primary (shore) side.

The headline price is £186, but with VAT and carriage included, it comes to £240. The unit does not come with outdoor 240V connectors, so you will also need to add the cost of these, as well as any installation work. If it preserves your steelwork, you, like us, may judge it a few hundred pounds well spent. **Richard Fairhurst**

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