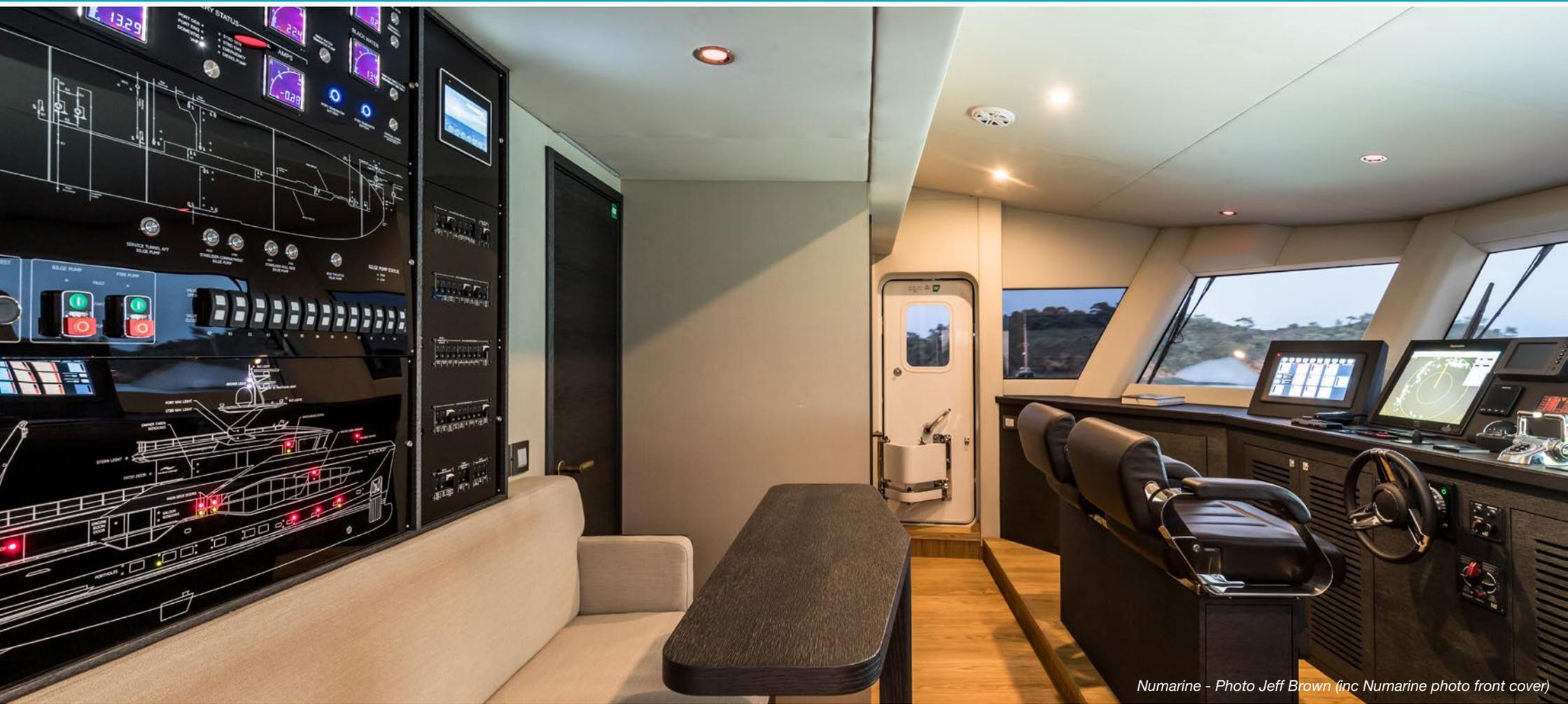


Marine Electrical Systems

Design, Manufacture, Supply & Commission





Numarine - Photo Jeff Brown (inc Numarine photo front cover)

Here at Energy Solutions we design, manufacture, supply and commission the full range of products required to build completely integrated hybrid power and electrical systems for vessels of all sizes.

These systems offer enhanced efficiency and innovative technology for the most discerning boat builders and end users worldwide.

Whether it is a basic system using the core products in our range, or a more bespoke system integrating many components, we offer customers a full technical advice, specification and commissioning service.

This brochure gives you an overview of our full service, we look forward to working with you.

Paul Holland
Managing Director



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Design

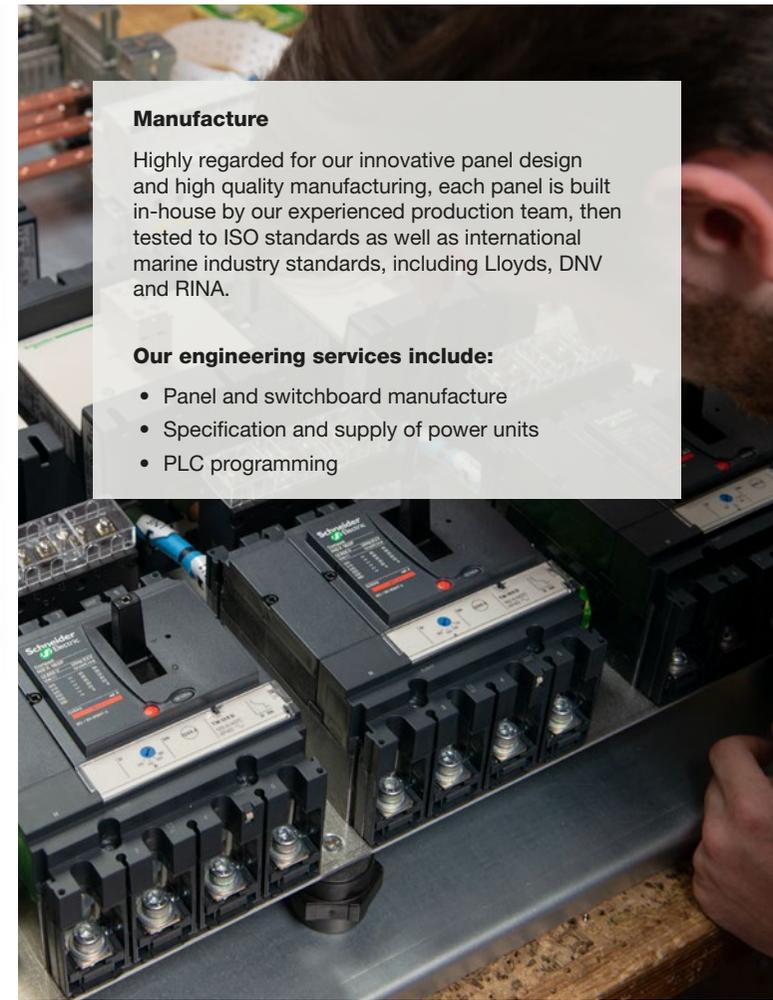
Working with leading boat builders and OEMs, we pride ourselves on our 24 years experience of delivering exceptional marine electrical systems. From the initial design onwards, we work closely with our clients to develop, manufacture, supply and commission the full system, building fully integrated power and electrical systems for vessels of all sizes.

These systems offer enhanced efficiency and innovative technology for the most discerning boat builders and end users worldwide.

Whether it is a basic system using the core products in our range or a bespoke system integrating many components, we offer customers a full technical service from design through to commissioning.

Our design services include:

- Single line schematics
- Panel wiring diagrams
- 2D & 3D layout diagrams of panels
- Full boat interconnection wiring diagrams



Manufacture

Highly regarded for our innovative panel design and high quality manufacturing, each panel is built in-house by our experienced production team, then tested to ISO standards as well as international marine industry standards, including Lloyds, DNV and RINA.

Our engineering services include:

- Panel and switchboard manufacture
- Specification and supply of power units
- PLC programming

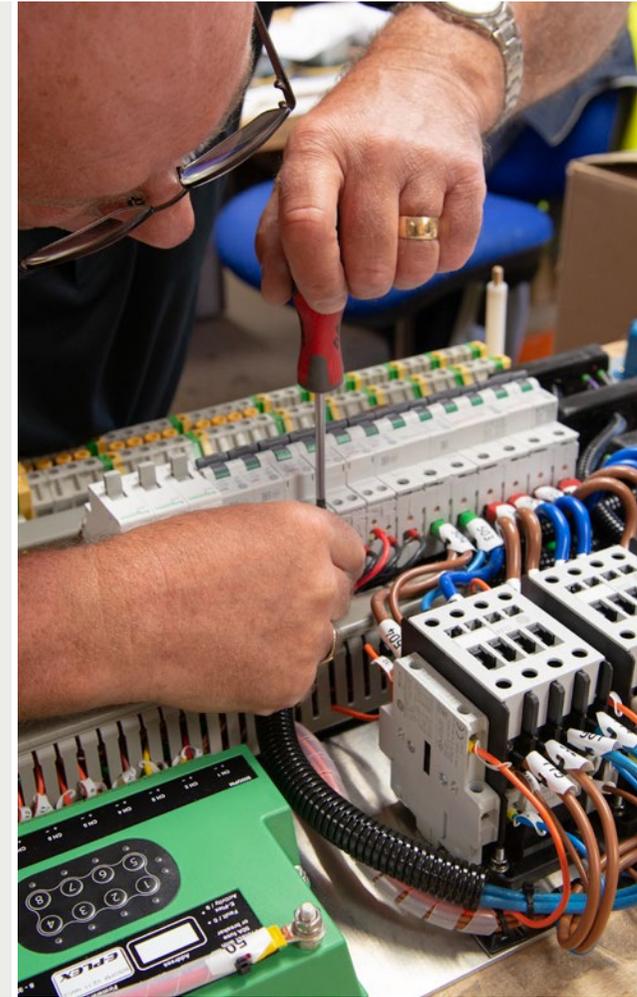
Supply

As part of the electrical system, we are able to supply the full range of power products needed to complete the design. We distribute for leading manufactures to ensure that only the highest quality products are built into our systems. Whether the system requires generators, loadbanks, isolation transformers or battery chargers, we are able to complete the requirements. This complete service is valued by leading boat builders & OEMs worldwide.



Commission

Our engineering team travel worldwide to commission the electrical systems we design for clients. This allows boat builders to install the systems to fit within their own build schedules then request the engineering team to do the final checks and training with key staff or crew if required.



Case Studies

Innovative, Intuitive Electrical System and Interfaces for Numarines' 32 XP Explorer

Energy Solutions have worked with Numarine on numerous vessel systems and were brought in to work on the electrical system for the 32 XP Explorer from the outset. The design of the electrical system and interfaces was a collaborative process; the Energy team worked closely alongside Numarine to ensure that they designed a system that met all of their performance and design objectives.

The helm panels in the main wheelhouse provide the visual interface with the power and control systems. With a mix of both touchscreen and traditional switches the panels are the key to the precise monitoring of the power systems; controlling everything from



generator stop/start to visual displays of open hatches and portholes. Repeater panels in the crew quarters and engine room mirror key elements of the helm panels allowing multiple monitoring points.



Numarine - Photos Jeff Brown

Wind farm crew transfer vessels use switchboards and helm panels designed and built by Energy Solutions

To control and monitor the power systems onboard these vessels required a comprehensive set of switchboards and helm panels. AMC approached Energy Solutions to design, manufacture and commission these elements for this series of vessels. Overall the control systems needed to be low maintenance, easy to use, and robust enough to meet their 40 year life cycle criteria.



Controlling London Titan Energy Solutions Panels Installed on the PLA's New SuperBoat

London Titan – the Port of London Authority's (PLA) unique multi-purpose mooring maintenance vessel incorporate bespoke panels from Energy Solutions. The team has worked with the PLA on many power, monitoring and control projects and on

this project they had a productive working relationship with Manor Marine who called Energy Solutions in for our bespoke panel building skills. The units were designed & produced by our in-house team and installed by Manor Marine.



Numarine 26 XP – Complete Electrical System Combines Multiplexing Control with Hybrid Power Innovation

For Numarine's 26 XP Energy Solutions designed an innovative hybrid power system with lithium energy storage. It includes over 40kWh of Victron lithium batteries, in conjunction with 32kVA of inverter capacity, and over 20kW of battery charging capability. It allows extended silent running of AC power systems on board. As an example, while the boat is in transit, the batteries are charged from engine alternators or onboard generators. When the boat reaches a remote site, the engines and generators are shut down. The owner and guests can then enjoy the boat



and surroundings in complete silence, while maintaining air conditioning in cabins, power to the galley for food, and also power to laundry facilities for the crew. The whole system is integrated into the E-Plex displays, allowing monitoring of power flow through the system, and stored energy onboard.



Distribution

To complete our designed systems, we supply a range of complementary power & electrical products from leading manufacturers including Northern Lights generators, ASEA frequency converters, and Victron Energy power electrics.



Balmar DC Charging Solutions

Balmar DC charging products and battery monitors help owners charge and monitor their batteries more efficiently. Balmar is recognised throughout the industry for its innovative technology, expert technical service and product reliability.





Energy Solutions are the UK distributor for Northern Lights generators. The brand delivers an award winning level of reliability, durability and simplicity – which matches the demands of both leisure and commercial boat builders and owners.

Their range of marine generators are both fail-safe and quiet, and owners rely on the long-life and easy maintenance of these generator sets to ensure the demands of marine environments are met safely.



TECHNICOLD

For even the most rigorously engineered products, there is no harsher test than the marine environment. Whether fresh water or salt, warm weather or cold, products designed specifically for the marine environment are sternly tested with every nautical mile. Answering this challenge is Technicold® by Northern Lights.

Because on-board space is always at a premium, Technicold AC systems are built to fit the smallest footprint possible while retaining a robust build. Designed for versatility, Technicold air conditioning systems can be placed in individual cabins or conveniently racked in a central location.



LoadBanks

ENERGY SOLUTIONS

Sizing generators for large sailing and motor yachts is a difficult job. Large variations in on board power requirements between different seasons, different times of day, and periods with and without guests make for substantial power requirement swings.

Often, despite the very best engineering practice, the yacht will be operating the generators lightly loaded with the poor emissions, low exhaust gas temperatures and increased engine maintenance that this leads to.

To address this problem Energy Solutions have developed the ES LoadBank to be used with generators that are running lightly loaded. The ES LoadBank, combines a heater tank, switch gear and expansion tank all in the same enclosure, reducing the footprint required to install the LoadBank. The PLC has also been upgraded which allows direct interfacing with a ship's system for control and monitoring. There is also a remote touchscreen control and monitoring panel, both options give flexibility for new builds and retrofits.





DockPower - Maximising power capacity

The DockPower isolation transformer allows two shorepower leads to be combined into a single supply to feed all the boat's loads. The two cords are loaded equally which ensures you get the maximum amount of power on board. The DockPower also offers galvanic protection.



Marine Hull Isolation Transformers

Energy Solutions offer single and three phase isolation transformers of all capacities.

Hull isolation transformers are the only way to completely eliminate the risk of galvanic corrosion between the ships hull and other metal objects (other ships, pilings etc.).

IsoBoost Transformers

The Energy Solutions IsoBoost transformer provides a cost effective and reliable solution to isolate and manage a shore line. It provides all of the features of a normal isolation transformer, as well as providing a boost function to manage the volt drop on heavily loaded shore lines, or to cope with a 208V (phase to phase) supply.



On startup, the isolation transformer automatically soft starts the transformer to prevent inrush from tripping the supply breaker. If the voltage is in range, it operates in 1:1 mode, so that the output voltage matches the input voltage. If the supply voltage drops below 215V, it automatically switches into boost mode, effectively raising the output voltage by around 10%. If the supply voltage recovers, the IsoBoost automatically switches back to 1:1 operation.

AC Changeover

We have AC Changeover systems to suit a wide variety of power supply configurations. 20A, 32A, 60A, 100A and 200A are available as standard units with bespoke versions available on request. These can operate with one or two shorecords as well as one or two generators.



Multiplexing

E-PLEX

Integration of electrical & electronic systems

E-Plex systems offer a unique multiplexing technology that allows you to have screens designed to reflect your brand, individual system and customer requirements. The modular system allows you to power and monitor a range of elements from simple lighting systems to complete electrical systems, including generators, batteries, media and more.

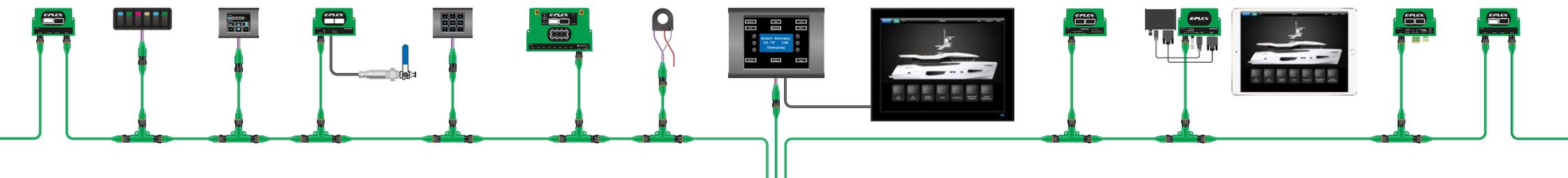
Power and data is transported over a simple two-wire bus and that offers scalable and flexible solutions at competitive costs.

In competitive market places where the emphasis is on leading edge technology, luxury and longevity, E-Plex is a valuable asset.

Modern boats, whether they are production or individual builds, need sophisticated power and monitoring solutions in order to integrate onboard systems in a seamless and intuitive way. Boat owners are increasingly looking for stylish, informative, easy to use interfaces that allow them to quickly access all the functionality of their boat.



E-Plex delivers all of this: connecting onboard power, tank monitoring, electrical monitoring, lighting, entertainment systems, heating/air conditioning, and many other essential systems in a seamless solution that can be installed in helm, on a remote panel, or via iPad/iPhone.





Numarine Photos - Kerem SANLIMAN



We stock the entire range of Victron Energy products and offer full technical advice and support, both pre and post sale.

Victron Range

Victron Energy products include pure sinewave inverters, sinewave inverter/chargers, battery chargers, batteries, DC/DC converters, transfer switches, battery monitors and more. Victron Energy has a strong, unrivalled reputation for technical innovation, reliability, and build quality. Their products are the professional choice for independent electric power.



Energy Solutions have been the UK's number one Victron distributor since 2006.

We supply a range of batteries from leading manufacturers. Lithium Ion, Gel and Lead Acid in all sizes and capacities are available for order. We work with clients to ensure that the right batteries are selected for the project and budget available.



An excellent range of batteries for marine environments, from lead acid and gel, through to lithium ion. Victron batteries are world renown for being high quality, long lasting and reliable.



Rolls have been the battery of choice for serious sailors for over sixty years. Perfectly designed for the marine environment, they have the highest lead content and largest liquid reserve of any deep cycle battery.



Dryfit batteries are a part of Sonnenschein's extensive range. This battery series provides a maintenance free, on-board power supply for marine applications.



Frequency Converters

Voltage and frequency converters from Asea Power Systems allow you to plug your yacht into shorepower anywhere in the world.

The Asea Power frequency converter will accept any input voltage between 180 - 520 volts and any input frequency between 45 - 66 Hz. The unit is completely automatic; simply plug in and Asea Power will do the rest. It also provides isolation.



ShorePower Cables

Outstanding marine cord and shore power sets, the Ratio range is hugely popular with boat builders and owners worldwide. The range is one of the few systems built to the new exacting ISO60309-2 standards and delivers the most watertight, rugged and reliable shore power systems on the market.





More information and
product videos

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