

PYS Remote Consultation & Design Services

Thank you for considering PYS for your marine electrical consultation and design services. As boaters, PYS understands the importance of a safe and reliable electrical system onboard.

PYS Marine Electrical Technicians have consulted, designed, and worked on thousands of boats throughout the world, and this repetition makes us specialists at what we do. The marine electrical system is at the heart of every boat and, simple or complicated; these systems are based on industry standards to keep you and your crew safe. It is this "expertise through repetition" combined with our desire to "do things right versus just making them work" that has made us leaders in the industry.

A Systematic Approach to Electrical Design

Through our extensive experience, PYS has developed a systematic two-phase approach to assist you in designing a marine electrical system that is safe and reliable while recognizing that it should be easy to understand and troubleshoot:

- 1) **Consultation phase:** PYS will work with you to define the requirements of your electrical system and select the fundamental electrical building blocks for your boat.
- 2) **Design phase:** PYS will create schematic(s) to show how your electrical devices should be interconnected.

Let's Get Started! The Consultation Phase.

The consultation phase is the most interactive portion of the process. We will discuss the requirements of your electrical system and how you want to use your boat to lay the groundwork for the design phase.

For the first meeting, and to save time and lower your consultation costs, we will ask you to prepare a Consultation Brief that contains:

- ⚓ Your project objectives (stay at anchor longer, cruising offshore, fishing, etc.)
- ⚓ What's currently not working on your electrical system
- ⚓ The existing electrical components on your boat that you would like to incorporate into the new design
- ⚓ A wish list of new equipment that you would like to purchase and install
- ⚓ Any relevant pictures you may have of your existing system

We ask that you create one consolidated document (saved in pdf format), rather than multiple emails, and submit it as an attachment to solutions@pysystems.ca with the subject title "Consultation Brief."

Kick-Off Meeting

The purpose of the Kick-Off Meeting (up to 1 hour) is to review your Consultation Brief with a PYS Marine Electrical Designer. Once an overview of the project is complete, we can start exploring some of the electrical building blocks that are required. This is a great opportunity to ask questions and discuss the nuances of selecting one electrical building block versus another. We have put together a list of the most common building blocks, and we encourage you to use this as a checklist for our discussion.

Electrical Building Blocks

Each building block has dedicated videos, published articles, blogs, and FAQs available on the PYS website <https://www.pysystems.ca/products/>.

We recommend reviewing this list while you are putting together your Consultation Brief. Include your questions, and a PYS Marine Electrical Designer will make recommendations. These are the most common building blocks of a marine electrical system:

- | | |
|-----------------------------------|-------------------------|
| ⚓ AC & DC panel | ⚓ External regulator |
| ⚓ Alternator | ⚓ Galvanic Isolator |
| ⚓ Battery bank size and chemistry | ⚓ Inverter |
| ⚓ Battery combiner | ⚓ Inverter/charger |
| ⚓ Battery isolator | ⚓ Isolation Transformer |
| ⚓ Battery charger | ⚓ Methanol fuel cell |
| ⚓ Battery monitoring | ⚓ Solar controller |
| ⚓ DC to DC charger | ⚓ Solar panel |

Follow-Up Meeting(s)

All Consultation Packages include a Kick-Off Meeting (as described above). Depending on the project, some boaters want to further refine the requirements of their electrical system with a one-on-one Follow-Up Meeting(s) (up to 1 hr in duration). See the Consultation Package details below to determine which Consultation Package includes a Follow-Up Meeting(s).

Offline Support

Not all the details are necessarily captured in the Kick-Off Meeting or even the subsequent Follow-up Meeting(s). As boaters, it's important to make the best decision and do the homework first. Researching and validating your ideas or flushing out new options is what we do prior to jumping to the design stage.

PYS Consultation Packages (Choose one of the following)

Package Name:	Basic	Intermediate	Advanced
Kick-Off Meeting	✓	✓	✓
Follow-up Meeting(s)	0	1	2
Offline Support (up to in hours)	1	2	3
Package Price:	\$398	\$798	\$1198

Which Consultation Package is Best for Me?

Choose a Consultation Package that matches the level of complexity of your design project. Boaters commonly match the level of support in both the consultation and design packages. For example, a boater who chooses the intermediate design package will commonly choose the intermediate consultation package as well. The three consultation packages are:

Consultation - Basic "I've Got This" Consultation Package – You know exactly which electrical building blocks you want. The Basic Consultation Package includes a Kick-Off Meeting with your assigned PYS Marine Electrical Designer and a confirmation that the chosen Design Packages are well suited for your project.

Consultation - Intermediate "I Need a Little More Time" Consultation Package – This is our most popular package, it provides all the benefits of the Basic Package, plus an additional one-on-one Follow-Up Meeting with your assigned PYS Marine Electrical Designer to further flush out the selection of your electrical system building blocks. You will also receive up to one extra hour of email support for your questions.

Consultation - Advanced "Let's Do This" Consultation Package – For those of you who want to further flush out the details before going into the design phase. You enjoy "geeking out" and want to get involved in most if not all the decisions. Besides the Kick-Off Meeting, you will receive two Follow-up Meetings with your assigned PYS Marine Electrical Designer, plus up to three hours of email correspondence.

What if I chose the wrong package? Not to worry, if you would like more or less time and attention, you can change the package following the Kick-Off Meeting.

Next Phase..... Your Electrical Design

Now the magic happens. Once you decide what you would like to see on your boat, a PYS Marine Electrical Designer will put all of the electrical system building blocks together in a schematic. Below is a table of the commonly available Design Packages (Basic, Intermediate, or Advanced) to choose from:

DC Distribution Packages (If applicable, choose only one package below)

Package Name:	(Up to Max # of Items)		
	Basic	Intermediate	Advanced
# of Battery Banks	2	3	5
DC Positive - Switched Distribution	✓	✓	✓
DC Positive - Unswitched Distribution	✓	✓	✓
DC Negative - Distribution	✓	✓	✓
Mix and match any combinations of Power Sharing device(s) below: Advanced Package Example: 1 Battery Combiner, 1 Battery Isolator, and 2 DC to DC Charging			
Power Sharing - Battery Combiner	1	2	4
Power Sharing - Battery Isolator			
Power Sharing - DC to DC Charging			
Mix and match any combinations of Charging Source(s) below: Advanced Package Example: 2 Alternators, 1 Battery Charger, and 1 Inverter/Charger			
Charging Source(s) – Alternator	1	2	4
Charging Source(s) - Battery Charger			
Charging Source(s) – Inverter/Charger			
Charging Source(s) – Methanol Fuel Cell			
Charging Source(s) – Solar Panel			
Charging Source(s) - Wind Gen			
Engine(s) Connections	1	2	3
Battery Monitor(s)	nil	1	2
Large loads (Thruster, Windlass, Inverter, etc...)	1	2	4
Package Price:	\$798	\$1498	\$1998

Optional Add-Ons to the DC Package(s):

Some boaters want more detailed info for their DC electrical system. Choose the Optional Add-Ons packages to supplement the info provided in the DC Electrical Package (see above).

Detailed Solar Array – Add-On Package

Get the pros at PYS to provide a detail solar array, including specifying solar panel, recommended solar controller, and even fusing and interconnection to positive and negative of battery bank.

Detailed Solar Array (If applicable, choose only one package below)

Package Name:	Basic	Intermediate	Advanced
Up to # solar panel(s)	2	4	8
Package Price:	\$298	\$398	\$698

DC Panel – Add-On Package

The DC Panel Add-On Package below identifies the DC breakers and wire sizes for the DC panel loads. Provide a list of all the electrical loads to be included in your DC panel, including estimated distances between the DC panel and the DC load. This information will help your assigned PYS Marine Electrical Designer calculate the wire sizes to individual DC loads. The DC Panel Package also includes DC wiring and fusing to the DC distribution. Choose a DC Panel Add-On Package that matches most closely to your number of DC panel loads.

DC Panel (If applicable, choose only one package below)

Package Name:	Basic	Intermediate	Advanced
Up to # of circuits	8	16	24
Package Price:	\$498	\$798	\$998

Bonding System – Add-On Package

The Bonding System Add-On Package is what connects and protects all the underwater metals on your boat. This detailed wiring diagram will show interconnections between underwater metals and the integration of the bonding system to the DC negative. Choose a Bonding System Add-On Package that matches the number of underwater metals (through-hull(s), propeller shaft(s), zinc(s), etc.) for your boat.

Bonding System (If applicable, choose only one package below)

Package Name:	Basic	Intermediate	Advanced
Up to # of bonding connection points	8	16	24
Package Price:	\$398	\$598	\$798

Detailed Equipment Specification – Add-On Package

Some boaters choose to have PYS provide a detailed shopping list of all the electrical building blocks chosen on their Design Packages.

Detailed Equipment Specification (If applicable, choose only one package below)

Package Name:	Basic	Intermediate	Advanced
Up to # electrical building blocks	8	16	24
Package Price:	\$198	\$398	\$598

Navigation Networking – Add-On Package (If applicable, choose only one package below)

Package Name:	Basic	Intermediate	Advanced
Number of NMEA 2000 devices (up to)	4	8	12
Number of NMEA 0183 devices (up to)	0	2	4
Number of Ethernet devices (up to)	1	2	4
Package Price	\$398	\$698	\$898

Detailed Wiring – Add-On Packages (If applicable, choose any package below)

	Package Price	What's Included
High Output Alternator and Regulator Wiring	\$798	Detailed wiring diagram of the alternator and the connections to an external regulator.
Detailed Inverter Wiring	\$598	Detailed AC and DC wiring schematic of the inverter/charger, including terminal assignments.

AC Distribution Packages (If applicable, choose only one package below)

	Up to Max of		
Package Name:	Basic	Intermediate	Advanced
Mix and match any combinations of AC Source(s) below: Advanced Package Example: 2 Shoresides, 1 Generator, and 1 Inverter Basic Package Example: 1 Shoreside			
AC Source(s) - Shoreside	1	2	4
AC Source(s) - Generator			
AC Source(s) - Inverter			
Galvanic Isolator(s)	1	2	2
Isolation Transformer(s)	nil	nil	2
AC Source Selector(s)	nil	1	2
AC Panel (# of circuits)	8	16	24
AC Grounding Bus	Included	Included	Included
Package Price:	\$798	\$1198	\$1598

Consultation and Design Packages

From the table below, choose one Consultation Package and any applicable Design Packages that best suits your project and your budget.

Table of Consultation and Design Packages Available

Selection (Enter X)	Package Name	Package Price
Choose one of the following 3 Consultation Packages below:		
	Consultation Package – Basic	\$398
	Consultation Package – Intermediate	\$798
	Consultation Package – Advanced	\$1198
If applicable, choose only one DC Distribution Package below:		
	Design Package – Basic	\$798
	Design Package – Intermediate	\$1498
	Design Package – Advanced	\$1998
If applicable, choose only one DC Panel Package below:		
	DC Panel - Basic	\$498
	DC Panel – Intermediate	\$798
	DC Panel - Advanced	\$998
If applicable, choose only one Bonding System Package below:		
	Bonding System - Basic	\$398
	Bonding System – Intermediate	\$598
	Bonding System - Advanced	\$798
If applicable, choose only one Detailed Equipment Specification Package below:		
	Detailed Equipment Specification - Basic	\$198
	Detailed Equipment Specification - Intermediate	\$398
	Detailed Equipment Specification - Advanced	\$598
If applicable, choose only one AC Distribution Package below:		
	AC Electrical - Basic	\$798
	AC Electrical - Intermediate	\$1198
	AC Electrical - Advanced	\$1598
If applicable, choose only one Navigation Networking Package below:		
	Navigation Networking - Basic	\$398
	Navigation Networking - Intermediate	\$698
	Navigation Networking - Advanced	\$898
If applicable, choose any Detailed Wiring Package below:		
	High Output Alternator and Regulator Wiring	\$798
	Detailed Inverter Wiring	\$598

Moving Forward

Now that you understand our process and what to expect, we would like to answer some of our most frequently asked questions:

Once my retainer is paid, when can I expect to start my project with PYS?

Paying your retainer secures your project in the scheduling queue of your assigned PYS Marine Electrical Designer. On average, the lead time to project Kick-Off is four to eight weeks from the payment of the retainer.

What is the best way to maximize my time with a PYS Marine Electrical Designer to reduce costs?

It always comes down to homework. If you spend more of your time consolidating and summarizing communications, we can spend more time consulting and designing. Spend some time putting together your Consultation Brief and ask your questions there. Consolidate your follow-up questions and feedback in fewer emails. This will reduce the number of emails and billable hours.

How do I pay for my retainer?

We accept Visa, Mastercard, or a bank wire transfer

Let's Do This!

- 1) Let us know which Consultation and Design Packages you selected by sending us an email at solutions@pysystems.ca
- 2) We will send you a retainer invoice for payment
- 3) Prepare and email your Consultation Brief
- 4) A PYS Marine Electrical Designer will contact you to schedule a Kick-Off Meeting either by phone, video chat or email

We look forward to working with you!