
Treasure Coast

RC Scale Boaters

Introduction to RC Scale Model Boating



Treasure Coast
RC Scale Boaters

Radio Control Scale Model Boat Club

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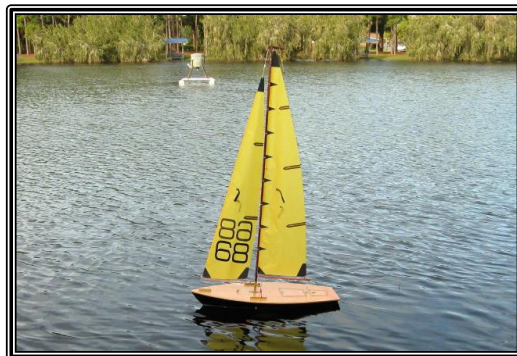
Model Shipbuilding - RC Overview

While RC airplanes and cars tend to get the majority of the RC modelers' attention, there is another area of RC that can be just as much, if not even more fun than both. RC boats provide a totally different experience than flying a plane or driving a car on many different levels. There are boats for everyone from performance enthusiasts, casual sailing fans, those who love the detailed runabouts of years gone by and more. Besides the aesthetics of individual boats, there are other considerations to think about such as battery or fuel power, to build or buy a Ready-To-Run boat and more.



What are the different types of RC boats.

- **Sail** - For the best in relaxation (unless you race), sailboats offer the lowest maintenance and are very fulfilling in regards to boat-handling skills. With no power other than the wind, skills must be honed to learn how to adjust the sails to take best advantage of wind currents. There is nothing like tacking into the wind, seemingly defying the wind direction.



TYPES OF RC BOATS

• **Racing** – While both gas and electric are available in RC race boats, electric is now the most popular. They are quieter, cleaner to maintain and much faster. The record for a fast electric boat is now over 145 actual mph. Racing and Scale boaters tend to have a different mind set. Racers are out there to win! Scale boaters tend to be more focused on the detail, construction, and sharing the hobby. It seems like very few RC boaters do both.



• **Scale** – There are many different categories of RC scale boats. One category which is really interesting to watch is the warship combat ships. They actually are built to sink and destroy each other. Personally, I can't spend all that time building a vessel to watch it get destroyed. Check out their website if you have a chance as it is really interesting. Their URL is - <http://www.ircwcc.org/>



TYPES OF RC BOATS – Cont'd

The more popular RC scale boats are work boats, pleasure craft, military ships, sailing ships, cruise ships, etc. The Treasure Coast RC Scale Boaters, based at Tradition Lake in Port St. Lucy, has 30 members with a large variety of vessels. You can visit their website at www.TCRCBoaters.org to see literally hundreds of different boats.



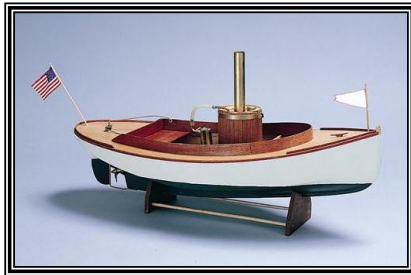
This presentation will not attempt to cover all the different types of vessels. What ever your interest is, there either is a kit or plans to help you with your dream RC project.



RC BOATS BASICS

• **Basic Construction / Shipbuilding** – The basic ship-building is virtually the same whether it be static display or operational RC scale ships. The really big difference is 1) they have to float, 2) they have to be water tight and 3) you need to be able to balance the craft with a proper center of gravity. One tip for sure, use CA glues (what did we do without this in the past) and epoxy. Personally I mix a large volume of epoxy (West Marine marine epoxy works great) and pour it inside the hull, rolling it around until all surfaces below the deck are coated. This obviously gives strength to the hull but also insures that it is watertight.

• **Motor & Drive Train** – Gas, steam and electric are all options although gas is not allowed on most city and county lakes and ponds. Gas is popular in one segment of the racing boats but the electric are beating them big time speed wise. I don't know of anybody using gas in RC scale boats. Steam yes, but not gas.



There are two kinds of electric motors and controls used.

- **Brushless motors** – High speed, poor low end speed control. Racing boats love these motors as they really scream, up to 50,000 rpm. Not so practical for the scale boats. The ESC (electronic speed controls) for the brushless motors are typically programmable and somewhat tricky to get them working properly. If you end up using a brushless set up it is recommended that you buy a matched pair, motor and ESC
- **Brushed motors** – All varieties of brushed motors are available from low speed, high torque to high speed, lower torque. These motors are excellent at low end control and are used in virtually all styles of scale boats. The ESC speed controls are readily available and typically can be used in boats and cars. Care should be taken, however, in getting an ESC which matches your power source. Speed controls used with NiMh/NiCd/Lead Acid power may not be compatible with LiPo (Lithium Polymer) batteries.

RC BOATS BASICS - Cont'd

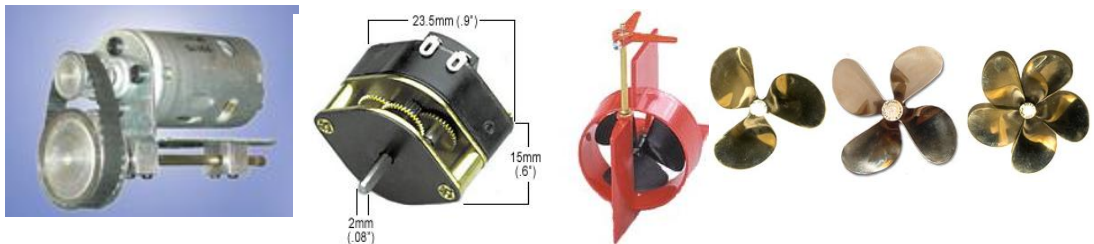
One ESC that is programmable for multiple power sources is the Mtroniks tio Marine 30 with is water proof as well.



Motors and drive set ups will vary depending upon the vessel. Motors vary in voltage from 6 v. to 36 v. and rpm from 2,000 to 20,000 in the brushed motors. Some of the more popular motors are Graupner, Robbe, MFA and Johnson.



The variety of motors and drive set ups are virtually limitless. Some of the more exotic set ups include belt drives, gear drives, and special prop arrangement.



There is also a wide variety of shafts and universals. Flexible shafts are used frequently in race boats but not so much in scale. Care needs to be taken in selecting shafts and universals for size and mounting configuration in the hull.



RC BOATS BASICS - Cont'd

• **Power Sources (Batteries)** – NiMh/NiCd/Lead Acid batteries are the most common and probably most used at this point. NiCd can obtain a memory and therefore have a somewhat shorter useful life. NiMh batteries don't have the memory issue and offer an improvement. Both, however, will lose their charge sitting around and must be recharged regularly and discharge/recharge cycled. Lead Acid batteries are used in the larger boats using the weight for ballast and they do deliver an excellent clean power source of 12 volts at 4 and 8 amps.

Lithium Polymer batteries are found in many modern electronic devices, such as laptops and cell phones. They are significantly lighter than Lead Acid, NiMh or NiCd batteries, and have much higher power capacity for the size. Over the last five years they have worked their way into the hobby market, for use in RC boats, cars, and model airplanes. Their light weight and high capacity make them ideal for long run times, while also providing significantly more power. Below are the basics of getting started: a digital LiPo balanced charger/discharger with power supply, LiPo batteries and a couple accessories to aid in monitoring the batteries and convenience adapters.



If you search for Introduction to Lithium Polymer Batteries, you will come up with a lot of source of information. Below are a few websites that will give you a more in-depth understanding of the LiPo technology as well as the Does & Don'ts. Make sure you research before making the change to Lithium power.

<http://www.rctoy.com/pr/2006/12/05/introduction-to-lithium-polymer-batteries/>

<http://www.rcgroups.com/forums/showthread.php?t=209187>

RC BOATS BASICS - Cont'd

• **Radio Control Systems** – Radio control systems have also dramatically changed in the past couple years. Until a couple years ago, RC systems used AM or FM based radio signals operating at a specific frequency. Care had to be taken not to turn on your radio if another person was using his system on the same frequency. This usually was disastrous with model airplanes but can be with scale model boats as well. The new technology is Spread Spectrum / PCM. This uses 2.4 GHz spread spectrum similar to handheld telephones. Spread spectrum technology is now the standard on all but the cheapest toy grade RC radios. No longer do you have to be concerned about frequency conflict and the signal is digital which means fewer signal conflicts.



• **Boat Accessories** – Just about anything you can imagine from lighting to sound systems.

