

Clever Craft

ALUMINUM BOATBUILDER COASTAL CRAFT COMBINES
TASTE AND TECHNOLOGY—AND A LOT OF IT

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It's a secret I've tried to keep from my editors, albeit unsuccessfully: I revel in the opportunity to visit boatbuilders and their shops, and I especially enjoy the process when it involves those who employ unique materials, processes, or skills. Thus, when the opportunity arose to visit the folks at a small builder in British Columbia, one whose products I'd seen and, up to this point, admired primarily from afar, I leapt at the chance.

I'd spent about a half an hour aboard a Coastal Craft at the Seattle Boat Show a few years ago. Based on what I knew, or what I thought I knew, I had already formed the theme of this story even before I boarded the first flight for Vancouver: "Aluminum boatbuilding at its best, outstanding craftsmanship married to elegant design." I wasn't disappointed; Coastal Craft vessels are among the finest built and prettiest aluminum alloy vessels I've had the pleasure of spending time aboard and sea trialing. However, I was entirely unprepared for what awaited me inside the series of immaculate shop facilities, located in the quaint, waterfront town of Gibsons, British Columbia.

Technology—if ever there was a buzzword in the world of boatbuilding, surely this is it. It seemingly holds the answer to so many of our woes afloat, from navigation systems to bilge pumps, all can be technologically advanced and improved, at least when compared to paper charts and buckets, right?

Still, technology can be both friend and foe, depending upon how it's installed by boatbuilders and yards, and used by vessel owners. Case in point, on my way to visit the folks at Coastal Craft, my over-the-road GPS took me through a residential neighborhood just south of the ferry terminal for which I was bound. It was lovely, scenic, and picturesque to be sure, and as an added bonus, I stopped to capture some images at what appeared to be a seldom-used rail crossing, as it wended its way into a mixture of vibrant fall foliage and ethereal mist.

On the downside, I was lost. As it happened, I had forgotten that I couldn't find the exact address of the ferry several days earlier, so I entered one that was "nearby." Once I realized what I'd done, I doubled back. As I did I drove under a huge sign directing me to the ferry, which I'd completely ignored, all in the name of blind trust in technology. Similar stories of errors made by both mariners and aviators are legion—some have lived to recognize their faults; others have not.

That ferry left without me. However, there was another, making my technology gaffe forgivable, and the delay gave me the opportunity to sample some wonderful seafood chowder at the Olive and Anchor café in Horseshoe Bay. Technology can, when properly and wisely employed, be a force for good in the world of boatbuilding.

When I finally arrived at the offices of Coastal Craft, my first stop was what I referred to as the firm's "war room," the place where I surmised that ideas were hatched, discussed, and critiqued, where new designs were planned and created, and systems specified and detailed. Meeting with the company proprietor and founder Jeff Rhodes, and his two technology specialists, Scott Tilley and Garry Mulligan, I was given a virtual run-through of the current vessel offerings and their systems: the 400 IPS, 450 IPS, 560 IPS, and the newest model, the 65 (all are powered by Volvo pod drives), hull number one of which was still under construction.

The demonstration used everything from hard copy drawings, sketchpads, and diagrams to LCD screens, iPads, and iPhones. I was soon taken aback by the realization that Coastal Craft's vessels are among the most technologically complex I'd ever encountered—truly cutting edge—and I was just as quickly rethinking my theme for this story. It was no longer *just* about finely built alloy vessels.

COMPLEXITY AND CONTROL

I recently wrote a column entitled "When Comfortable Equals Complex," in which I described the acceptable balance between intelligently designed, well-engineered, and properly built complex vessels, and the comfort and amenities they offer their owners. At that time I had no idea that such *production* vessels existed, however, I was now being indoctrinated in the details of precisely how this is done by those who were building them.

Coastal Crafts are equipped with the E-plex digital switching system (See **Digital Switching: A High Bar**) and a Faria Maestro computer and touch screen, which essentially provide a means of control for most of the vessel's major and minor systems, from lighting and pumps to heat and air conditioning, via a permanent touch screen as well as wireless remotes.

component within the E-plex system, and access onboard cameras and monitors for tankage, battery voltage, bilge pumps, smoke alarms, and more.

Because interconnectivity is important for this to work, the system also provides for such connections via the Maestro PC (a computer specifically designed for marine use), enabling the vessel owner to communicate with the Internet via cellular, wi-fi, or satellite connections. E-plex also provides a "watchdog" component for security monitoring using motion sensors, as well as hatch and door indicators. It even alerts you in the event the dinghy is untethered.

Onboard AC power is supplied via a variety of potential shorepower inputs—a 12kW generator or via two Victron Quatro 10kVA inverters. As one might expect, or hope, on an advanced vessel such as this, the application and integration of these systems is designed to be as seamless as possible, what Rhodes refers to as an integrated "Steve Jobs approach." The vessel is capable of accepting a variety of shorepower inputs, from 15 amps at 120 volts, essentially a common extension cord, up through 50 amps at 240 volts. Incorporating, among other components, Charles Iso-Boost transformers, it is resistant to high and low input voltage; it can boost the latter, as well as correct reverse polarity.

The user simply plugs the vessel in using one or both of the 120- or 240-volt shore cords, both of which are on Glendinning cord reel systems, using whatever adapters are necessary, and the Coastal Craft designed power management system takes it from there. "The boat knows what to do," says Scott Tilley, Coastal Craft's electrical specialist and lead designer of the system.

Center: A raised, twin-seat helm console offers the pilot and passenger an unimpeded view of both their surroundings and the instrument panel. Important controls are within easy reach, and primary instrument displays are angled as to be perpendicular to the eye, offering the sharpest view.



The main salon is wrapped in glass, offering passengers an inviting atmosphere. Because the view is so good, those at the helm won't feel the need to retreat to the flybridge in order to safely operate the vessel.

'SWISS ARMY' SHOREPOWER

Tilley describes it as "the Swiss Army Knife" of shorepower systems. When anything less than 240-volt power is available, then the system simply sends all incoming voltage to battery chargers, which charge the lithium-ion house battery banks, which supply the inverters, which supply all of the vessel's onboard loads.

The inverters are also capable of load sharing with the generator or shorepower system, to carry momentary spikes during motor or compressor startups or when dock power is insufficient. Again, the folks at Coastal Craft emphasize the seamlessness of this approach. They've spent nearly two years perfecting, monitoring, and analyzing these systems to make them as

hands-off, user-transparent, and reliable as possible.

Despite the fact that digital switching systems, such as the E-plex, enable builders to significantly reduce the volume of wiring that is routed throughout a vessel (along with the associated weight, especially important on planing vessels such as Coastal Craft), complex vessels will simply be laced with wiring,



Steve D'Antonio



Steve D'Antonio

Left: The engineering space under the saloon sole is bright, neatly laid out, and accessible, making service for the primary fuel filters and polishing system hassle free. Right: The Coastal Craft 56 is equipped with a state-of-the-art Kabola diesel furnace that includes in-sole radiant heating.

DIGITAL SWITCHING: A HIGH BAR

Want to turn on the heat or air conditioning a few hours before you arrive? Not a problem. Simply access the vessel via your phone, iPad, or laptop, and you can control anything that you would normally control via E-plex while aboard. While that's a valuable feature embodied by this system, there's much more to it than remote controls.

Digital switching is far from commonplace and some would describe it as controversial (others would call it infernal); its debut into the recreational marine market a decade or so ago was something less than a rousing success. In essence, it relies on a central power bus that runs throughout the vessel. Most electrical equipment, lights, pumps, and heating and air conditioning systems are connected to this source of power via inline, digitally controlled switches, essentially "On"/"Off" controls.

The switches in turn are actuated via touch-screen panels and remote controls, including iPads, iPhones, etc. The interconnection between the vessel's built-in touch screens and the digital switches is via small data cable-type wiring, while wireless remotes interface via onboard wi-fi. The results and advantage is manifold. Heavy large gauge wiring no longer runs to a similarly large and bulky main electrical panel, saving both weight and space.

Control of the equipment can be accomplished onboard, from any position as long as the user has a remote, his or her iPhone or iPad, etc., along with conventional controls. Remote control from afar is also easily accomplished as long as the user and the boat have an Internet connection. This remote log-in is available through any Internet connection including mobile devices. This is in conjunction to the Vessel Monitoring/Security system that is also standard on all Coastal Craft vessels.

The vessel security system sends out notifications, reporting conditions on pre-determined sensors such as bilge pump activity, high water alarms, smoke, fire, temperature, battery voltage, shorepower status, security sensors, etc. Important alerts such as low battery voltage and high water are also sent to key Coastal Craft personnel, including company president Jeff Rhodes. There have been cases where such an alert has been received and they were able to call an owner while he was aboard and review the problem before he even noticed it on his own instrumentation.

Because it's software controlled, the ability to finesse the controls of each piece of gear is nearly infinite. You could, for instance, program the system so that one virtual button turns on all of the gear you want to be on when you are ready to get under way, and another button switches the vessel into nighttime operating mode, and another can turn everything you want off when departing the vessel. The possibilities are endless.

Coastal Craft has been using digital switching systems since 2007, launching more than 30 boats with this set up, and logging well over 1,000 hours of actual data for review and analysis. That's quite an achievement when many other builders have adopted digital switching and abandoned it or are only now considering its application for their product.



Furthermore, Coastal Craft has developed technology to remotely monitor their vessels (using GSM and satellite connectivity) and separate technologies to allow them (the builder and servicing agent) and the vessel owners to log on to their vessels and, as previously mentioned, control and monitor onboard systems. As the manufacturer and servicing agent, Coastal Craft can gain remote access to the back end code that operates the distributed power and digital switching for maintenance and troubleshooting purposes from afar.

"We have been integrating E-plex into our vessels since 2007. In the beginning it was simply switching and monitoring hotel systems," Rhodes says. "Today's system is fully integrated into all aspects including control of in-flow radiant heating, air conditioning, distribution, and control of power management features that allow seamless user interface of high AC loads through large inverters tied into large lithium cells without the immediate dependency of the generator. The manner in which we monitor and manage loads simplifies the user's experience and we have been successfully using this technology to offer the user the conveniences of being 'on the grid' while 'off the grid' (no generator use)."

According to Rhodes, E-plex has an app called iPlex, which allows an iPad to act as a stand-alone onboard remote control for the E-plex control panel. "This is connected into a dedicated onboard network that also receives Internet via GSM allowing the user to close the iPlex app and check emails and surf the web while being connected through the same wi-fi network that hosts the iPlex control," he says.

"Using a readily available off-the-shelf CradlePoint router we have configured a smart network that offers Internet through multiple connection points, including a dedicated onboard GSM device, incoming wi-fi, as well as [the ability to] configure an onboard phone as a hot spot. By setting up connection properties and priorities in the router, the connection management is seamless."

Rhodes says another advantage is the ability to add other systems to the network, including entertainment systems and wireless music streaming, again using an iPad as the remote. IP addressed security cameras can be configured on the network, too, allowing owners to log on to the boat to watch camera feeds.

Ultimately, it's no exaggeration to say the possibilities with digital switching are nearly endless. In order for it to work well and reliably, however, the folks designing, installing, and programming the system must be very sharp indeed. Based on what I saw, it seems Coastal Craft has the right stuff to make this all work.

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If you liked this story about Coastal Craft and its 560 IPS, we have plenty more to slake your thirst in our free e-newsletter *Channels*. Visit www.passagemaker.com and click the subscribe button.

albeit of a lesser gauge. This represents a challenge for any builder to accomplish this neatly and reliably while ensuring that wire routing avoids the potential for damage. On alloy vessels this is doubly important in that the entire hull and cabin structure are grounded and therefore presents a short circuit risk in the event a wire is crushed, or its insulation is cut or chafed through.

To avoid this scenario, Coastal Craft vessels are built with PVC wire ways installed throughout. While that in and of itself is not unique, the manner in which they are installed is—they include access "windows" cut into the tubing, providing ready access and ventilation for the wiring within. It's a small detail, but one I, as a former marine electrician, could not help but notice and appreciate.

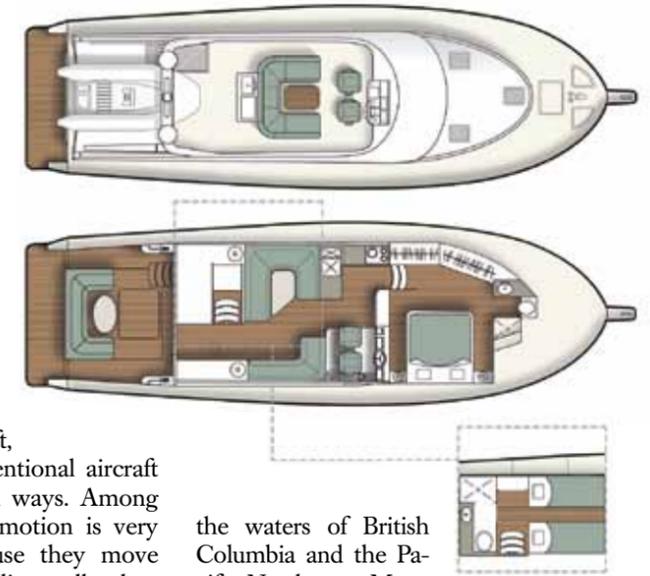
Because all Coastal Craft vessels rely on Volvo IPS drives, joystick controls are ubiquitous. Aboard the 560 IPS—the vessel I sea trialed during my visit—there are four joystick-equipped control stations, one on each side of the cockpit, one in the pilothouse, and another on the flybridge. A Volvo tilt helm is also employed in the latter two locations, along with full Volvo electronic

engine instrumentation, which is also displayed on the Maestro helm screens.

Vessel trim is controlled via a set of Humphree Interceptor Trim Tabs. Ideally suited for high-speed craft, these differ from conventional aircraft flap-like tabs in several ways. Among others, their range of motion is very small. However, because they move vertically rather than diagonally they create more lift with less surface area. The Trim Tabs use an electric servo control, which enables them to actuate extremely quickly—a full stroke, just under two inches, in less than one second—which means in automatic mode they effectively maintain vessel trim. Perhaps most appealing in alloy construction, they are made primarily from composite materials, eliminating corrosion and dissimilar metal issues.

NIGHT VISION STANDARD

Floating debris, limbs, and especially "deadheads" or large logs, are an operational risk for any vessel plying

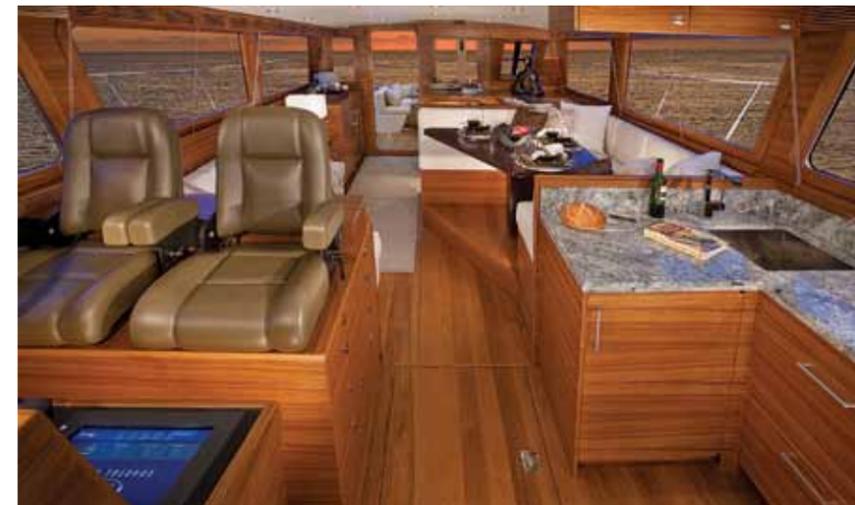


the waters of British Columbia and the Pacific Northwest. Many commercial vessels in the region rely on strong, resilient alloy hulls to protect them from such hazards. Coastal Craft vessels have that and another defense mechanism, FLIR, an infrared night vision package that is standard for all models to help those at the helm spot floating debris, along with a full suite of Garmin navigation and communication electronics, including radar, plotter, AIS, autopilot, and VHF, all of which are standard equipment.

Energy management and efficiency is important where any cruising vessel is concerned. Toward achieving that end, Coastal Craft vessels are equipped throughout with LED lighting, nearly all of which is provided by industry leader IMTRA. Entertainment systems include Intellian satellite TV, Sirius satellite radio (and weather), a Bose Lifestyle V35 entertainment system located in the master stateroom saloon, cockpit, and flybridge, which also includes a Pioneer Blu-Ray disc player, iPod docking station, and three handheld remotes.

When I first stepped aboard the 560 IPS I was immediately taken with the warm, cozy, and inviting interior,

The view aft is nearly as good as the view forward—a true measure of a user-friendly design.



SPEED AND SOUND

Under way, the 560 IPS kicked up her heels and held a bone in her teeth, moving with alacrity up to 31 knots at 2100 rpm. Noise levels throughout were very reasonable, due in part to generous application of acoustic insulation as well as the isolation of the engines under the cockpit. Levels were measured as follows: saloon/pilothouse, 70dBA; master cabin, 67dBA; and guest cabin, 77dBA (it's closer to the engines). At 10 knots and a leisurely 8800 rpm, those figures dropped to 62dBA, 58dBA, and 67dBA respectively.

TANKAGE DETAILS

Not surprisingly, the boat's single 800-gallon fuel tank is all aluminum, integral construction. Integral construction, where tanks are concerned, makes good sense. What I found both surprising and comforting was that this was the only integral tank. While aluminum is well suited for fuel use, it's a poor choice for sanitation and potable water systems. Recognizing this weakness, the Coastal Craft 560 IPS uses 316L stainless steel for its 160-gallon potable water tank, an excellent choice for this application.

The 70-gallon sanitation tank is also stainless steel; effluent is extremely corrosive and regardless of the corrosion resistance of the alloy that's chosen, this often proves to be a very challenging environment for any metal. The good news is Coastal Craft reports no service failures of these tanks. Given the choice, my material preference for sanitation tanks would be fiberglass or polyethylene.

literally. While I was fortunate to have a clear, sunny day for the sea trial, it was still November in B.C. and therefore chilly. Heat aboard Coastal Craft vessels is provided by a Kabola diesel hydronic heating system. However, this is no ordinary heating system. In keeping with the vessel's high-tech nature, and quest for efficiency, it's of the in-sole radiant variety, making it a pleasure to take one's shoes off before entering the cabin. Because it's interfaced with the E-plex/Maestro system, a user can turn the system on or raise the heat before leaving home, on his or her way to the marina.

The engine room, which is located under the cockpit, and machinery space,

COASTAL CRAFTSMANSHIP

All the high-tech gear, digital switching, joysticks, and web interface are of little consequence aboard a vessel that isn't seaworthy, reliable, safe, comfortable, and pleasing to the eye. Read about all aspects of the craftsmanship that goes into Coastal Craft boats: Why painting aluminum is more than just applying a coating. Why it requires planning and adherence to a process. How the interiors are contemporary in design and impeccably joined. And how, thus far, the company has had excellent success with lithium-ion batteries. Visit www.passagemaker.com, click on the Magazine tab, then Web Extras.

located under the saloon, both rely on a fully automatic, temperature- and pressure-sensitive Delta "T" ventilation system. A separate and proprietary Delta "T" head ventilation system is also employed in the accommodation spaces.

TECH OR NOT?

Is technology really the solution to all of our woes afloat? No, and in some cases, particularly when poorly applied, technology can be the source of far more trouble than it's worth. Simply put, high tech isn't necessarily the answer and it doesn't work for every boat.

Still, this is the 21st century and I am a strong believer that *some* boatbuilders will benefit from delivering the type of technology-derived comfort and



A stable hull form and an Interceptor Trim Tab system keep the 56 on an even keel. Thanks to ample power and lightweight design, she cruises easily at over 30 knots.



Elegant and understated design features prevail. The master head is both functional and spacious.

LENGTH OVERALL 56' 6"
LENGTH ON DECK 54' 9"
LENGTH AT WATERLINE 48' 6"
BEAM (maximum) 16' 6"
DEPTH 8' 2"
DRAFT 4' 9"
AIR DRAFT 25' 6"
FUEL CAPACITY 800 U.S. gal.
FRESH WATER CAPACITY 180 U.S. gal.
BLACK WATER CAPACITY 70 U.S. gal.
POWER OPTION 1 (twin) Volvo IPS 1050
ENGINE Volvo diesel D13-800
DRIVES (2) IPS3
MAX SPEED 34 knots
MAX CRUISING SPEED 28 knots
RANGE @ 27 KNOTS (estimated) 450nm
RANGE @ 8 KNOTS (estimated) 1600nm
LOADED DISPLACEMENT 64,000 lb.
LIGHT DISPLACEMENT 55,000 lb.
POWER OPTION 2 (twin) Volvo IPS 1200
ENGINE Volvo D13-900
DRIVES (2) IPS3
MAX SPEED 36 knots
MAX CRUISING SPEED 30 knots
RANGE @ 27 KNOTS (estimated) 400nm
RANGE @ 8 KNOTS (estimated) 1900nm
LOADED DISPLACEMENT 65,000 lb.
LIGHT DISPLACEMENT 56,000 lb.
PROPELLERS (2) Volvo "Nibral"
GENERATOR Fisher Panda 12kW
PRICE AS TESTED \$2.7 million
WARRANTY Structural: 10-year limited
Deck hardware: 2-year limited
Paint: 2-year limited
Joinery & Upholstery: 2-year limited
Machinery & Electrical: 2-year limited

All warranties are transferable

security to which boat owners/buyers have become accustomed in their homes and automobiles. Coastal Craft appears to have risen to that challenge. "We try not to do too much at once; we try to get it right, stable, and reliable first. We have no ego, and a thick skin," Rhodes says.

I believe success is sometimes a result of not knowing it can't be done. There are folks in this industry who simply set their mind to doing something. They surround themselves with the right people to help them do it, and then they succeed, and often make it look easy. In essence, that's Coastal Craft's M.O.

SEA TRIAL CONDITIONS

Test Location		Vancouver		Number Of Crew		3					
Fuel Filled		50		Water Filled		80		Ambient Air Temp		46°F	
Wind		5-10 mph		Wave Conditions		Calm		Water Type		Salt	
Boat Painted		Yes		Boat Washed		No		Speed Measure Method		GPS	
RPM Levels	Engine Speed (r/min)	Fuel Rate (l/h)	Fuel Rate (l/nmi)	Engine Load (%)	Boat Speed (knots)						
Idle	600	13.43	1.75	34.13	7.65						
1000	992	53.55	4.85	35.25	11.05						
1400	1396	124.23	7.94	58.75	15.65						
1600	1597	162.35	8.04	66.88	20.20						
1800	1793	197.66	7.89	73.75	25.05						
2000	1993	235.80	7.83	79.13	30.10						
2200	2192	282.59	8.32	88.75	33.95						
Rated (2300)	2296	309.20	8.41	93.00	36.75						
Full	2372	337.29	8.96	99.63	37.65						

Performance data supplied by Coastal Craft



The master stateroom's combination of warm wood tones, light-colored bulkhead coverings, a walk-around berth, and bright finish offer a comfortable home-like atmosphere.