FROM THE PACIFIC POWER CATS SHED

PROGRESS REPORT ON THE **PATHFINDER PILOTHOUSE 52** AND THE **SEDAN 41**

I story **PETER BRADY**

The two boats currently under construction by Pacific Power Cats share a huge amount of design DNA and a lot of common moulded components, but they are very different in their style and layout and in many ways reflect the two ends of the spectrum in displaning power cat pleasure boats.

3D computer rendering of master stateroom.

The Pilothouse 52 has a new hull design, nearly 4ft (1.1m) of extra beam and 11ft (3.3m) of extra length, four separate levels and a fully enclosed flybridge. She feels as large as *Rehab* did at 58ft and is an absolute home away from home with a high level of luxury and equipment, yet still very practical with plenty of shade and ventilation. The 52's design is complex because it combines absolute privacy in its huge owners stateroom and guests bedrooms all with large ensuites and has five separate entertaining areas so that there will always be somewhere to sit and relax when steaming or at anchor be it day or night or in hot or cold weather.

The Sedan 41 by comparison heads in a different direction with its minimalist approach harking back to where we began with displaning power cats, trading sleeping accommodation and equipment levels for lighter weight, less complexity and therefore more fuel capacity and fuel efficiency which combines to provide a huge range for a boat of this size. This pared back approach does not mean the 41 has a basic fit out as it still features stone bench tops, leather upholstery and teak joinery with some very subtle details. It just means the owners like an open plan minimalist look and do not intend to have large numbers of guests on board and on top of this, have made very careful choices on where they want that little bit of extra quality in materials and fit out details.

Each new build brings different owners to the shed and with them a different spotlight on a particular facet of the boats. In the case of *Paradigm*, it was the mechanical side of the boat and in particular the electrical system which was the owners' special area of interest. With *Piera*, it was the lifestyle and the requirements needed to meet commercial survey. In the case of the 52 and 41 owners, both men are following the mechanical side very closely as they will both have to operate the boat's systems and the women have been heavily involved with the fit out styling, which means that both Lorma and I have worked very closely with them throughout the planning and construction.

As well as sharing their basic design DNA, both boats also strongly reflect the difference between custom and production boatbuilding as they are gradually taking on their owners personalities during construction. So rather than them buying a boat and then adapting their lifestyle to suit it, we are slowing wrapping the boat around them as the project progress and we get to know them better. This style of building is the absolute example of a process that I think has been devalued by its application to anything that is different these days and that is the word 'bespoke'. Bespoke design is a collaboration between designer-builder and client, with a melding of form following function, creativity and practicality to achieve a unique product. To achieve a true bespoke outcome, there has to be a level of respect between both parties because at times, neither one will have it all their own way otherwise it would not be a true blending of ideas.

In both of the boats under construction, this collaboration and the flexibility of custom boatbuilding has seen many small changes made to the original layouts and equipment levels including the sleeping arrangements on both projects. In the 52, both mid bedroom now have queen size beds rather than one

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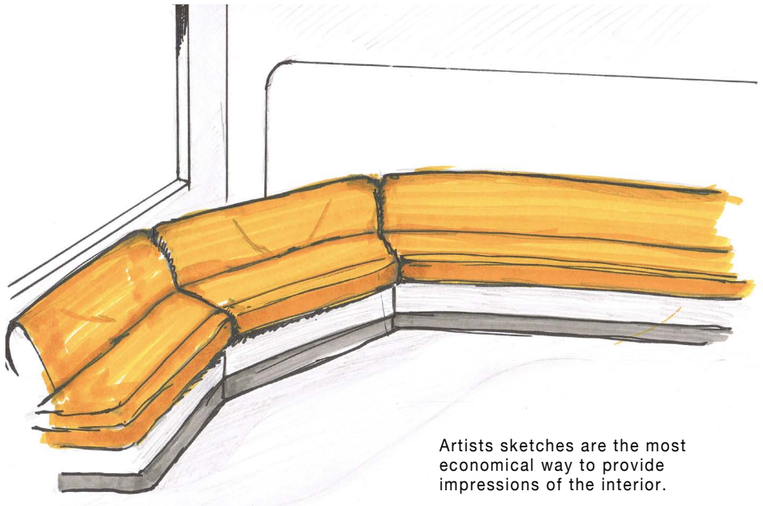
cabin with a queen size and the other with two singles. In the 41, the guest cabin now has a single bed located on the outboard side of the cabin as well as a queen running fore and aft, providing sleeping arrangements for either a small family or for two single guests rather than a couple. Another example is on the 52, with the mid bathrooms being redesigned to provide more storage and floor space along with lots of small alterations to the layout in the form of joinery and materials. From the initial design, we have through the combination of 3D rendering and full sized mock ups been able to present both a picture of how things will be, plus provide a physical feel as both are equally important in delivering the owner exactly what they want. The 3D rendering is definitely a valuable tool allowing owners to explore different combinations of colours and textures while getting a firm fix in their mind on how the boat will look internally. It is not a quick or cheap process as drawing in 3D at a detailed level requires both computer skills and a working knowledge of joinery and surfaces and whilst it is more accurate and options can be easily substituted once the surfaces are developed, a skilled artist with pencils who can draw interiors is still faster and therefore more economical if the process is more about impressions rather than a build detail. Full size mock ups I believe are still the most valuable in providing a feeling of space, getting heights right for individuals and providing us as boatbuilders with a physical representation of where services can run and finalise the joinery details. Again this level of detail highlights the difference between custom and production boatbuilding as we design and build to make the client as comfortable as possible where by necessity, production boatbuilders must work to the average, often leaving people at the shorter, taller, lighter or heavier end of the scale ergonomically disadvantaged.



Artists sketches are the most economical way to provide impressions of the interior.

Both of the boats feature soft rounded solid timber corners to their joinery, although the 52 uses a grained laminate rather than timber veneer as the owners are prepared to trade off some warmth of the timber for the ease of cleaning and toughness of laminate. We have still used solid timber corners in our joinery, not only for the look, but also for the safety of having no sharp edges to fall against. I think it does our industry no credit that they have set out to convince the buying public that sharp corners in a boats fit out are fashionable when in reality, they are just cheaper to build, particularly when you are using mass produced computer cut parts. It is ironic that so much of motor vehicle development has been driven by safety measures like padded dashes, collapsible steering columns, safety belts, crumple zones and air bags when boats are heading in the opposite direction with sharp corners, open staircases and half height handrails.

The two boats also reflect the old saying from the early days of sailing multihulls: there are three options when designing and building a multihull (in reality it is the same for monohulls) but you can only have two of them together and they are:

1: lightweight and therefore more performance, or in our case range as well;

2: economic build cost;

3: comprehensive and luxurious fit out.

So if you have performance and range plus a comprehensive and luxurious fit out, it will not be an inexpensive boat to build. If you have performance and range but want to keep the build cost down, then the comprehensive and luxurious fit out has to be pared back and if you want a comprehensive and luxurious fit out but need to keep the build cost down, then a lower tech and therefore heavier construction system will be required, which will have an effect on performance and range.

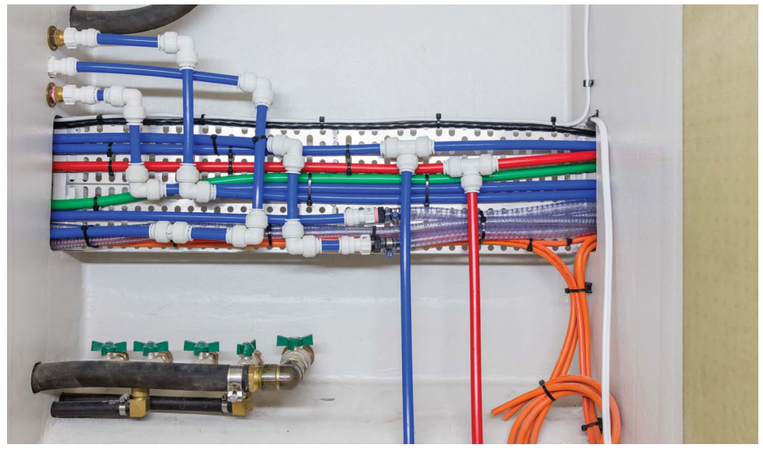
As with everything else it does, the displaning power cat does blur these lines slightly because it has a constant power source unlike a sailing multihull and it is not as affected by weight as a planing hull that has an absolute minimum power to weight ratio to plane. The 52 has a comprehensive equipment list plus an expansive and luxurious fit out, yet still has a top speed of 26kts, a mid to late teens cruising speed and long range so whilst it is not an inexpensive boat to build, we have used the DECKIT build system to create a value for money product and the displaning hull form advantages to retain performance and range. The 41 trades less accommodation and equipment but not quality to build on the displaning hull forms advantages for performance and range, while keeping the cost reasonable.

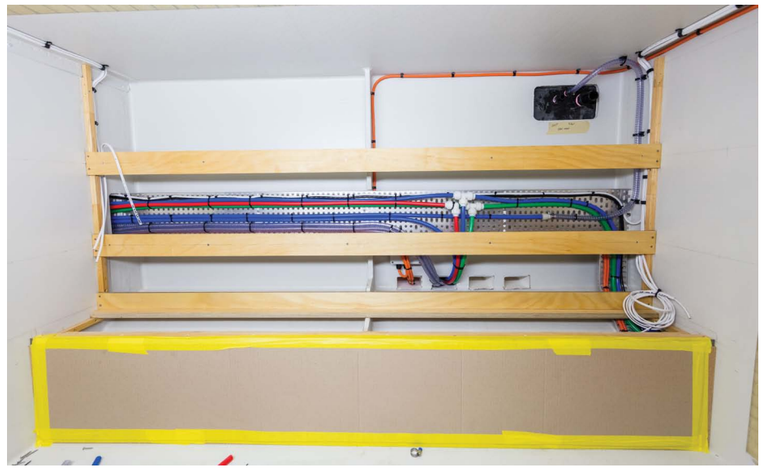
On their visits during the boats construction, both sets of owners get a rare insight into how their boat is being built and whilst it may not be of pure technical interest to all owners, it does provide confidence in the boats strength, show them where and how the mechanical, electrical and plumbing systems are installed and give them an appreciation of just how much thought and planning goes into what is behind the scenes in building a boat. Taste and styles in boats looks will change with fashions, however quality will always stay and although these two boats do not have the plumb bow look that is the current fashion, the quality of the construction and fit out is obvious and will still be there when current fashions have faded as they inevitably do and sensible design features return.

I discussed in my last article on *Piera* that having two narrow hulls with two engines does create a far greater challenge for power catamaran designers and builders to both make these services accessible for the future while keeping them out of sight through the accommodation than it does on a monohull where they can run down the centre of the hull under the floor. This is an even greater challenge when you look at the equipment list for the 52 which is not actually much more than *Piera* had in 45ft. This includes five air-conditioning units with cooling water in and out and drip trays with drains, four toilets of which two are bidets with both salt and fresh water feed and in the case of the bidet's hot water as well, four fridges or freezers, an induction cook top, microwave convection oven, an icemaker with fresh water feed, seven sinks with water to and drains from, a washing machine with water to and drain from, a dryer, two barbecues, a rubbish compactor, engine cooling water in and out, exhaust out, engine air in and out, bilge and fire-fighting systems, a watermaker, bow thruster, hydraulic power pack for the raising and lowering duckboard, hydraulic steering, fuel systems including the ability to trim the boat by pumping fuel from one tank to the other, a fuel flow monitoring system and hot, cold and salt water running around every part of the boat. The electrical systems include 12 volt DC electrics with their own batteries and charging systems for the engines, engine instrument harnesses to the dashboard and their controls with three remote stations, 24 volt electrics with two LiFePo4 house battery banks for the lighting, pumps, inverters, some

refrigeration, alarms and electronics with their own batteries and charging plus an 240v AC system that has two shore power inlets, two isolating transformers for the shore power and 2 inverter chargers. Electronics and their cabling including sounders and transducers, radar, GPS aerials, radio's, sat phone, deck camera, TV and FLIR camera. Throw in the need for electrical components like the high amperage 24 volt wiring from the 10 solar panels and the 2 x 200amp alternators to be kept separate from the AC wiring and electronics to prevent interference and our own decision to have no plumbing joins where they cannot be easily inspected and maintained and you can understand why the services are such a huge part of the design and construction process. The services are not only far more complex than a house, but they are subject to detrimental effects like vibration and sharp motions that a domestic system would only undergo in a natural disaster. Taking all of that in to consideration, it's no wonder I have not had any hair for a long time!

The 41 in comparison is quite simple with only two levels, two toilets, three sinks, a gas hob, gas heater, microwave-convection oven, one fridge-freezer, one icemaker, one washing machine dryer combo, one shore power inlet, one inverter charger, and the same solar, high efficiency alternators and inverter 12-24-240V electrical system as the 52.





TOP: Cable trays in dedicated spaces make for neat and orderly plumbing.

ABOVE: Conduits across the wingdeck keep different systems separated and protected.

To achieve our goal of creating a common sense and balanced arrangement with the potential chaos that all these services running sight unseen around two hulls required, we trialled a system on *Piera* and have further improved it for the 52 and 41. The planning of the services began from very early on in the design process with me laying all the plumbing and electrical equipment out on the master plan, then moving all the components around including the actual internal layout, until everything started to align. Keeping the batteries, inverters, switchboards and heavy draw items like the bow thruster and anchor winch as close together as possible reduces the current drops, which in turn lowers the wiring sizes, weight and therefore cost. Keeping the majority of the plumbing and pumps to the other side of the boat with a ring feed loop around the boat of fresh cold and hot along with salt water then allows short branch feeds to each area like the bathrooms and galley to be utilised. The combination of the tanks on the wingdeck and the double flooring around this arrangement used on all our new boats has been a great help in running the services across the boat as it has allowed us to spread them out in conduits which helps with separating the different voltages and keeps the water away from the electrics. This tank arrangement has also helped in running the services fore and aft in the boat as it has created a corridor down each side, but inboard of the bedrooms and bathrooms in which to run cable trays. These cable trays are mounted out from the tank side to prevent anyone accidently drilling a hole into the tanks and they can be accessed at any time in the future by removing the inboard wall panels through the middle of the boat. On either end of the mid-section, smaller cable trays run aft to carry the services to and through the engine rooms and forward under the front owner stateroom floors. With this layout, the plumbing is predominantly on the starboard side and the electrics on the port side and the only wiring running to the lower parts of the hulls is for the bilge pumps and transducers with every plumbing fitting accessible in the future. On each boat, the DC and AC switchboard and inverters are within feet of the house batteries and inverters and are located half way between the heavy power feed of the alternators and the heavy power draw of the anchor winches and in the 52's case, the bow thruster. I know it sounds overly dramatic, but I will state it again that the fitting of the services is one of the larger and more complex operations in the boatbuilding process and unless it is carefully planned and co-ordinated, each trade will put their part in as quickly as possible, but without thought to who comes next or to the boats structure.

The 52 and the 41 although they are different in their sizes and philosophies reflect the huge amount of thought put into them from both us as the designer –builders and the owners into what they want their future lifestyle on the water to be. As to the quality, the owners have been able to inspect the construction and fit out at every stage warts and all and from this, build the sort of confidence in the boat which will be a huge comfort if they are ever caught out at sea in rough conditions.

WHAT'S NEXT ON MY DRAWING BOARD?

> an Offshore 45 and a 52 GT that build on the incredibly practical layout of *Piera*, but use higher tech construction in conjunction with higher horsepower engines to create a long-range cruiser with cruise speeds in the high teens or low 20's wrapped up in more contemporary styling that befits the term Grand Tourer that GT stands for.

> a range of commercial power catamarans based on the load carrying ability of the new 52 hull shape that will include fishing boats, search and rescue boats, patrol boats and ferries. We have proven over the last 20 years the commercial viability of the displaning power catamaran in terms of fuel economy, load carrying capacity, seaworthiness, ride quality and long structural life. Now in combination with the DECKIT modular construction system we want to demonstrate to commercial boat buyers that the construction economics also stack up when compared to both monohulls and catamarans built in aluminium.