

## Feadship concept design Pure: The power of now

**Feadship is renowned for its ability to create pure custom superyachts for clients that meet their every desire. But what would happen if its designers and innovators developed a yacht that blended the immense experience gained from working for owners with the boldest visions that have yet to see the light of day? A Feadship with the cleanest possible architecture, ready for next-generation yacht control and clean propulsion, designed for unadulterated enjoyment. The result is a Feadship concept design that despite the name could actually be built today... The result is the 81.75-metre *Pure*.**

Designed to inspire the next generation of owners, the first Feadship Future Concept was unveiled in 2006. Since then, the fortune tellers at Feadship have consistently emboldened people to reimagine what is possible in the superyacht world. The hybrid propulsion predicated on *F-stream* in 2007, for instance, set the tone for the radical fuel consumption reductions unveiled on *Breathe* in 2010. And all this was then uniquely proven in practice on the Feadship *Savannah* five years later, which was the world's first luxury motoryacht with hybrid power.

### Further still

Other prescient concepts have inspired Feadship clients to break new ground in areas such as eco-friendly design, multi-functional spaces, outdoor entertainment, slender hulls, privacy, autonomous living and all-glass superstructures. While each was based on client feedback, brainstorm sessions and in-depth research, the newest member of the design portfolio goes a little further still, as designer Jan Schaffers explains...

“At Feadship we are used to designing totally bespoke yachts for clients with every aspect driven by their individual desires. *Pure* synthesises all the know-how gained in recent times over the types of spaces and exteriors which owners ask for in the purest way possible, following the red thread of these wishes. Many of us are inherently reluctant to truly explore what our actual needs are and *Pure* takes a deep dive down this path. To slightly paraphrase the famous Steve Jobs quote, ‘people don't always know what they want until you actually show them.’

“*Pure* is not, however, a flight of our collective fantasy. From the awesome open-plan spaces to the future-compatible propulsion and lower deck command centre, the Studio De Voogt design team have worked closely with the Knowledge & Innovation department and engineering experts at Feadship as well as current and new suppliers to ensure each solution proposed is realistic and would actually work in practice now.”

### Lines of connection

The essence of *Pure* is the unparalleled visual and social connections offered by her open on-board architecture and three-deck atrium, a feat which is very challenging to achieve on a yacht. From structural integrity to fire & safety regulations, all the parameters involved have been meticulously calculated. As futuristic as it may look in the renderings, the Feadship yards could actually start building *Pure* tomorrow.

The technical key to making the design work is the two central elements around which the rest of the yacht can be built, not dissimilar to the way tower blocks have large elevators and stair shafts at their core. These structural components are also home to the main deck bar (port) and main staircase (starboard), serve as the fire and mandatory zones, incorporate the casings and offer discrete crew routing. The development has even gone as far as to include contrasting textures for inside and outdoor facing surfaces.

### Inside out

With this essential structural and practical foundation in place, the creators of *Pure* have certainly made the most of the myriad possibilities on offer. As anyone who has seen recent triumphs such as *Pi*, *Zen* and *VIVA* will testify, Feadship has chalked up some remarkable design achievements in deploying giant slabs of glass as part of the exterior structure. *Pure* now does the same with the interior, with glass becoming an interchangeable aspect of the space.

Located half inside, half out, an extraordinary elliptical glass atrium connects all lines of sight across three decks. The way the giant glass facade cuts through adds to the sense of connection with each other and the environment, and together with the flood of light makes the whole boat feel open. At the same time, owners and guests can always find privacy in retreats like the balconies – one with a jacuzzi, the other with seating – which close off with glass doors.

“We set out to create a perfectly balanced interior with incredible spaces for everyone,” adds Schaffers. “Exceptional views are available from wherever you stand along with a sense of wonder about how the spaces are actually working that stimulates you to explore. We developed this design with a mix of joy and tenacity, determined to adjust every angle until it works to perfection. This is an environment which is equally suitable for hosting amazing parties or displaying exciting art collections. *Pure* is a place for all seasons and all people.”

### Windows to the world

All these sensations and much more besides are hidden from onlookers because *Pure* is as solid on the outside as she is open on the in. Minimalist at first glance, the profile is decidedly sculptural with a remarkably strong character. The lines are drawn as simple as possible in order to generate an air of calm. They merge seamlessly with the volumes – which make the yacht instantly recognisable from afar – and some highly finessed twisted surfaces. A set of underwater anchors avoid the need for pockets in the side while the windows are genuinely flush, a significant factor that sets *Feadship* ahead of the curve according to Bram Jongepier, senior specialist at De Voogt.

“Many yards claim to offer flush windows but in fact have a small offset of four to five centimetres, leaving about one centimetre in tolerance. Starting with the build of *Venus*, launched in 2012, *Feadship* redefined the meaning of ‘flush’. Our windows have no offset to the surface, giving a tolerance of around the millimetre mark. And on *Pure* we’re moving the dial further by baking a pattern on the glass using a ceramic composition called frit. This is black on the inside like a tinted window – enabling those on board to see out – yet white on the outside so people cannot look inside. The colour scheme matches the overall sculptural shaping so the windows are virtually imperceptible from the outside unless you are very close up.”

Taken as a whole, the negligible amount of exterior detailing generates an optical illusion and a loss of one’s sense of scale. Approaching *Pure*’s stripped-back exterior, guests will be unsure of how large the yacht is, further enhancing the deep magic when they discover the spellbinding space that lies within. A little like Lucy entering Narnia for the first time...

### A brief tour of *Pure*

As this is a concept, let's also go through the wardrobe and see what else might be found on *Pure* should she come to pass. The first point to emphasise is that this design has five decks, with the tank deck counting as a fully functioning part for reasons that will become apparent once we turn to the propulsion. Entering via the main deck, the wow factor is profound as you take in the multiple layers – from the shaft of light emanating from the sun deck above (reminiscent of the Pantheon perhaps) to the cascading views over the beach club below.

The sun deck itself features a large jacuzzi forward with fire pits, an amidships bar zone and a dining area aft with seating surrounding the giant elliptical skylight. In addition to this visual connection with the interior there is a direct link to the owners' deck below. Here the aft lounge is in turn coupled with the atrium in a spectacular way, with the owners having the option to walk around this glass edifice and survey all they see. The expansive master stateroom is in a prime position forward, making the most of the fact that *Pure* has no conventional wheelhouse. Another private jacuzzi nestles into the foredeck, offering a perfect haven for the owners.

This latter option is made possible because the main deck foredeck is home to two giant tender garages, with the craft being launched via the sides of the vessel. The rest of the main deck is completely open with dining and lounging facilities strategically placed for the best views. Moving aft, the effect of the light shining down on the swimming pool area below is dazzling. Direct access to the beach club is via sweeping curved stairways and the entire area can be opened up when at anchor with three giant hatches stern and both sides. There is a retractable glass-bottomed Jacuzzi amidships and occupants of the lower deck guest suites will not have far to walk to enjoy a truly memorable experience suspended above the sea.

### So where's the wheelhouse?

There's something else located on the lower deck that is sure to raise an eyebrow or two. For as readers may have realised by now, *Pure* does not have a bridge deck. She doesn't need one either as the yacht is controlled from a concealed Command Centre from where everything is simulated and displayed on screens. The information required to drive *Pure* will come from all kinds of sources such as radar, AIS, maps, depth sounders and cameras strategically placed around the yacht. This data is all combined, then presented using smart augmented reality visualisation.

The Feadship Foresight programme provides further assistance to the captain and crew with regards to situational awareness, motion prediction, routing, on-board comfort and finding the most fuel-efficient way to travel between locations. Foresight is connected to an online server which generates bespoke high-resolution forecasts of wind, sea and swell, including in relatively sheltered areas.

When visual lines of sight are essential for the crew of *Pure*, stairs lead directly up to wing controls on the owners' deck, with another helm station on the sun deck being accessible via the amidships stairway. "We recognise that the Command Centre is a controversial proposal that may lead to resistance, but such solutions are already common on subs and naval vessels," says Jongepier. "Superyachts revolve around their owners and many prefer to have a forward-facing stateroom with panoramic views in the place where a wheelhouse normally is. Placing the bridge higher up impacts the profile. The Command Centre is a viable solution and at Feadship we see this as a big topic for discussion within the industry."

#### More fuel for thought

The same can be said for the propulsion system on *Pure*, which is devised to cover likely fuel requirements over the next decade or so. The future-compatible tank deck compartments are ready to be adapted with options based on the expected transitions. While nobody can say with certainty which technologies will become dominant or what fuels will be available, this proposal has been devised by technical specialists who have accurately checked every aspect of the system. It is also based on user profiles with the design and subsequent refit options assessed using the Yacht Environmental Transparency Index (YETI) tooling, giving an insight into overall efficiency, fuel consumption, shore power use and the annual emissions impact.

In modern yachtbuilding parlance the term 'hybrid propulsion' usually refers to a combination of diesel direct and diesel electric propulsion. *Pure*, on the other hand, is an energy hybrid, with diesel electric propulsion receiving energy from batteries and liquid fuel. Three scenarios are envisaged for a *Pure*-like Feadship: the initial delivery in 2024 and two upgrades in 2027 and 2030 respectively.

### Pure in 2024

The launch version of *Pure* would be a diesel electric energy hybrid with the battery pack and generators running on fossil or renewable diesel. As these fuels differ slightly, extra functionality will be built in to encourage use of the latter. The market for renewable diesel is developing and expected to be a viable alternative within three to five years so long as transparency of the supply chain is assured.

The battery pack is large enough for *Pure* to sail about 120 NM on a single charge, making her in effect a plug-in hybrid vessel. The electric range makes it possible to sail up to 30% of the yearly miles in fully electric mode if the shore power infrastructure is in place. The generators are downsized to deliver cruising speed with ample margins, while the top speed can be attained using additional power from the batteries. In preparation for the conversion to methanol, the fuel tanks are oversized to offer a 7,000 NM range and have an improved safety level built in.

### Pure in 2027

Fast forward three years and technological development should allow a hybrid of battery packs with generators running on methanol. While methanol engines are already being developed, the existing infrastructure will need to be re-routed to provide methanol in yachting hotspots.

Feadship expects type-approved methanol engines to be available within a couple of years along with conversion kits and dual fuel engines capable of running on either diesel or methanol. The production of renewable methanol will need to be brought up to speed to have a sufficiently large impact. Although the reduced energy density of methanol decreases the range by 50%, fuel production and lower emissions will have a major positive effect on the overall annual environmental impact.

### Pure in 2030

Last but not least, *Pure* 2030 will feature all-methanol fuel cells with batteries for reduced plug-in functionality. Proton Exchange Membrane (PEM) fuel cells are currently available on the market together with methanol reformers, although not yet at a higher overall efficiency level than diesel engines. To improve this, Feadship is working together with suppliers to develop solid oxide fuel cells coupled with adapted methanol reformers. These cells have a higher efficiency and the adapted reformer leads to lower losses, improving overall efficiency. The range of this version of *Pure* is likely to be around 5,000 NM, a normal range for an 80-metre Feadship.

Since the fuel cells are very quiet and the fuel has a very low impact, the battery capacity can be reduced to a range of 60 NM. This in turn will provide space for the fuel cell installation, which is expected to be larger than diesels. The renewable fuel and near-zero-harmful emissions offer an extremely low impact compared with current technology.

See and hear more

Many of the topics raised by this striking new Feadship concept design will be discussed in the following episode in the UniQ series of live broadcasts by Feadship on 13 October. Go to [uniq.feadship-events.nl](http://uniq.feadship-events.nl) to register for 'Built through inspiration' and to watch recordings of the first two editions of these exclusive behind-the-scenes panel discussions.