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Highly reputed and flourishing

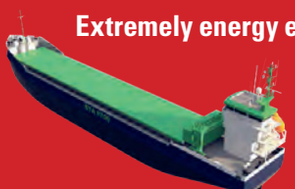
DUTCH YACHT BUILDING SPECIAL

Fleets of foiling ships?

Research to tackle the challenges

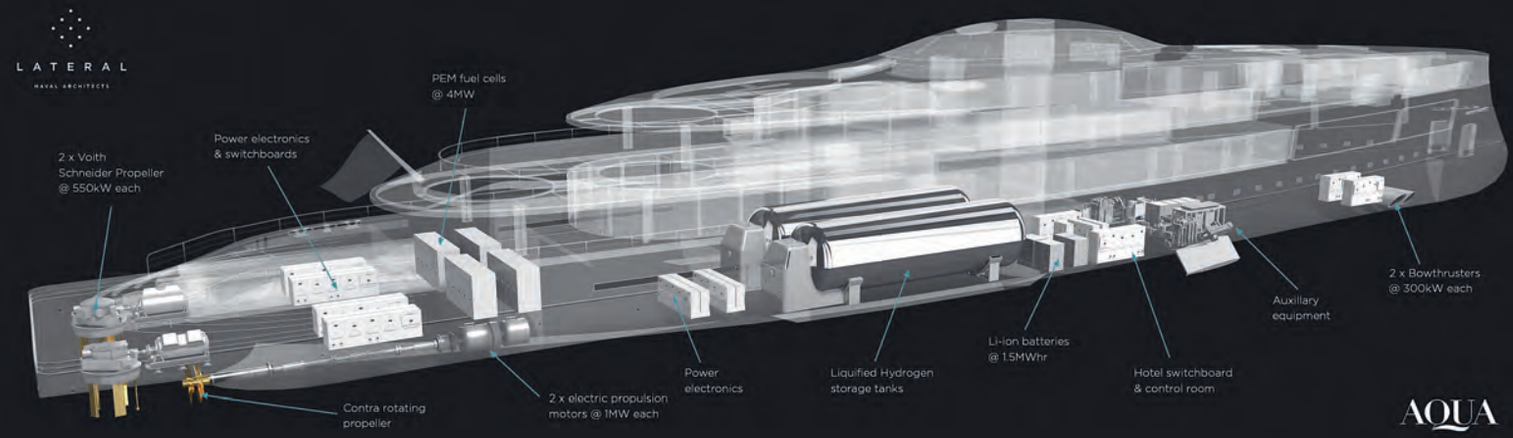
ÈTA 6700

Extremely energy efficient



Headed for the open sea

Fishing vessel Z-98 Windroos



THE FUTURE IS ZERO AND THAT FUTURE IS ELECTRIC

Electrification can exploit future fuels, cleanly produced via renewable energy

It has become a repeating feature of briefs from new clients that their projects should feature "future technology". The context of this statement is made (in the main) with reference to the matter of sustainability and how such technology might deliver a yacht with enhanced environmental credentials.

When I was growing up, I recall a television series in the UK called "Tomorrow's World". On this show, the presenters gave insight into how the world might look in "the future". I remember watching in awe about what life might be like and was excited about when that future might arrive. At the age of 48, I frequently find myself reflecting on that TV show and considering some of the things that have come to pass, and some that have not. For sure we can video phone each other, that came true, but I am still waiting for my holiday on Mars. My reflections on this childhood experience have also had some bearing on my work. I reflected on clients wanting future technology on board their yachts and wondered how we, as naval architects and engineers, might actually predict the future. Indeed, it also got me thinking, when actually is the future? We tend to use the term to describe a distant event. Of course, the reality is that with every day that passes, the future moves one day further away. I came to realise that I needed to shift my thinking, because the future will never arrive.

Higher level view

The first question I asked was how we could help our clients to shift their thinking, especially considering the bewildering spectrum of technology that is visible to them, both in marine and non-marine environments. It is easy within our industry to forget that the choices that someone who is about to spend 50, 100, 200+ million euros on a superyacht faces, are quite scary. We frequently see clients focused on the detail of one specific technical development, but lacking a bigger picture, or being so bewildered that they suffer from the curse of over-choice; where the complexity and diversity of available options leads to a tendency to revert to the simplest, most familiar and perceived lowest risk solution. Over time, this factor can lead to a stagnating and a risk aversion pathway developing, and paradoxically, choice leading to a narrowing of design innovation rather than widening it.

To avoid over-choice we need to "dial out" to a simpler, higher level view and a methodical narrative that underpins the choices we present our clients.

Photo: Technical rendering of Aqua, yacht of the future.

Aqua's aft deck features an innovative series of platforms cascading down towards the sea (courtesy of Sinot Yacht Architecture & Design).

On to zero

At the core of our thinking was the question 'what can we say about the future with certainty?' To answer this, we looked to our clients themselves, the regulatory environment around us and the wider geo-political environment. Considering factors from all of these areas, we concluded that we can say with certainty, that the future is "ZERO"; zero carbon, zero emissions.

This then led us to the question 'how do we get to zero?' Lateral Futurology is a simple framework that underpins how we strategise the technology and engineering choices we present our clients. It is based on the idea that there are three key elements that shape the choices we can make:

- Technical innovation;
- Challenge the paradigm;
- Alternative fuels.

Technical innovation

We are all familiar with the progress of technology via innovation. It is at the heart of what engineers, designers, yacht builders, equipment suppliers and a whole plethora of our industry do every day. However, the pace of innovation is progressive. In short, it is a long-term game and generally delivers benefits in an incremental gains approach over many project cycles. We believe that, in the long term, the progressive development of technical innovation may deliver up to twenty per cent.

Challenge the paradigm

Take a look at the world's superyacht fleet. Aside from a highly diverse range of adventurous and iconic styling, audacious lifestyle features and artisan interiors, the yachts all sit in a narrow solution space of proportions, form and gross tonnage. If you step outside of this and leverage some fundamentals of naval architecture, there are significant gains to be achieved. Challenging the paradigm is often not comfortable, as it dictates a different outcome to the norm, but can equally enable designs that stand apart.

When you get down to what challenge the paradigm can produce, it is pretty powerful, because it can deliver in a short timescale and at low technical risk. We believe that challenge the paradigm can deliver a relatively easy thirty per cent.

Alternative fuels

Alternative fuels hold the promise of achieving the full 100 per cent required to get to zero. It is possible to engineer and build a yacht today that would achieve zero, with a relatively low technology risk. However, it is the operation that presents the barrier, because the mechanism to deliver alternative fuels across a prolific and well-es-

Aqua features a hydrogen-electric system capable of catering for all onboard energy needs.

tablished distribution network remains very embryonic.
We would liken an alternative fuel yacht today in the same manner as discussing an electric car in the 1980s; technically feasible, lesser endurance and nowhere to charge it. Consider Tesla, arguably the electric car industry's major player, who in order to gain the first mover advantage took on the task of building their own propriety distribution network. In the future, it may not be enough to merely build a yacht.

The future is what you will go and do when you finish reading these words

One vision of the future, based around the use of hydrogen, is that energy generated via renewable sources is transported via the electrical network, and converted locally at the point of distribution to hydrogen. This is then used on board via fuel cell technology to generate electrical energy.

Electrification

There is a key theme here, and that is electrification. We believe that electrification is the gateway to fully exploiting the use of future fuels, cleanly produced via renewable energy.
The widespread adoption of hydrogen (or any other alternative fuel) in a meaningful way is quite a way off, and it remains unclear how a distribution network will be built or who will bear the investment cost. To realise a hydrogen powered yacht, we must take the first step of electrification. Yet, only a small percentage of the world's superyacht fleet uses any form of electric propulsion architecture. We are quite far behind even at a fundamental level.
About the future we can therefore say that the future is zero, and that the future is electric. At a fundamental technology level, this big picture view focuses our choices on the pathways we should explore.
However, the most important thing about the future does not involve the specifics of technologies. It involves biology. It involves our thinking. The future is closer than you think. In fact, it is right now. The future is what you will go and do when you finish reading these words. It is a second away, a minute away, an hour away. The actions you take today are the future. You need to stop thinking about the future as a distant event that you need to be ready for and begin living the future today.

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