

How to build a sustainable offshore platform:

# A new design philosophy

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*Sustainability has become a corporate imperative, regardless of the industry. Such changes push offshore oil and gas solution providers to adapt their supply chain and rethink their solutions from an environmental standpoint. While “intelligent” and “sustainable” are becoming synonymous with today’s engineering standards, what makes an offshore platform design fit “new normal” sustainability demands?*

### The new market context

The global focus on carbon emissions reduction is no longer a breaking news agenda, but rather a “new normal” context to which global industries and markets have to adjust - including some hard to decarbonise sectors, such as oil and gas. But what does sustainability mean for offshore energy platforms?

For engineering companies operating in offshore energy, sustainability means considering two sides of the coin: the environmental impact created not only when building a product, but also while using and then decommissioning it. In other words, a sustainable platform design is one that has considered the full platform life cycle - from the initial design, fabrication and installation to the ongoing operations, maintenance and finally decommissioning.

This holistic approach requires a complete rethink of design philosophy – one that challenges conventional equipment choices at all stages and thinks of the installation limitations from day one.

### Offshore platform design: Less is more

When designing a sustainable offshore platform, it is best to try and stick to a minimalist aesthetic, if project requirements will allow. By designing platforms to require fewer components offshore, and by reducing materials used for those components (e.g., by using less steel), emissions can be reduced throughout the fabrication, transportation and installation processes.

First, engineers need to calculate all the potential causes of greater carbon emissions when creating a solution. It requires each piece of equipment, and its lifecycle, to be identified and challenged. At Aquaterra Energy, we do this via our own

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carbon calculator developed specifically for our engineers to use throughout the design process, calculating material weights and the supply chain’s carbon impact. We seek to take this even further by inspecting how existing in-country infrastructure can be used for offshore platform installation to create additional emission savings.

For example, why sail a heavy lift barge from Rotterdam to West Africa when you can design a platform installation solution that uses a jack-up rig and/or vessels that are already there? It’s well known that maritime transport emits around **940 million tonnes of CO2 annually**, and therefore minimising the need for offshore installation trips will substantially reduce, not only an offshore platform’s carbon footprint, but that of the industry at large.

## It takes two to tango: digitalisation and renewables

Designing a self-powered offshore platform might be a novel concept today, but it will become mundane moving forward. Incorporating renewable power into platform design is where Aquaterra Energy sees the future of powering offshore oil and gas platforms.

Using renewable technologies like wind turbines and solar banks creates a self-sufficient solution that does not require traditional diesel generators for power. This not only significantly reduces the overall lifetime emissions of the platform, but also those that are associated with the ongoing maintenance and logistics for refuelling visits. In situations when the amount of power generated by local solar and wind is insufficient to meet platform power requirements, operators can look at implementing backup solutions. Solutions such as installing a battery pack for intermittency, or by connecting to adjacent larger-scale renewable offshore sources can both provide alternative power supplies should it be needed.



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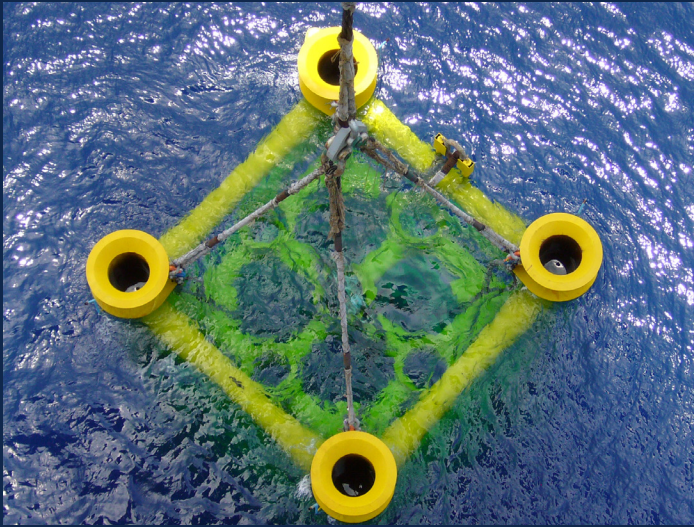
But an offshore platform's efficiency does not have to stop at its energy source. Implementing intelligent, digital monitoring solutions that are managed through onshore systems support by further minimising required maintenance trips and can help to reduce the number of personnel required offshore. Such solutions not only have a positive impact on transport emissions, but also enhance safety as they help to eliminate some of the inherent risks of working offshore. Here, digital advancements complement renewable solutions and result in low-power emissions, and a low-risk platform.

## Smart supply chains: balancing the "E" and "S" of ESG

While we considered how the platform's installation and operations affect design philosophy, the fabrication stage also plays an important role in executing a sustainable solution.

For projects in developing economies, there is often a push for operators and their suppliers to utilise local content for both the operation and fabrication of the





a negative impact on the 'E' side, such as when the country the platform is destined for does not locally produce the raw materials required. In these cases the raw materials must be shipped in, potentially incurring large and unavoidable carbon emissions related to the transport. This creates a balancing act.

If this is the case, then shipment should be delivered in the most environmentally friendly manner available. For example, looking for the closest supplier to your project's location minimises total distance travelled and therefore will reduce transportation emissions, albeit not avoid them.

Intelligent, informed balancing between maximising local development and local content needs plus minimising marine transport where possible is what gives a real competitive advantage to service providers.

### A novel design philosophy

Balancing between short term project limitations and long-term sustainability goals is not a question of technological capabilities, but one that depends on the commitment of operators and their engineering partners. The energy transition is a challenging task and those taking part in it must accustom themselves with being challenged. For offshore oil and gas operators that means shifting from the conventional towards novel alternatives, like renewable power. For engineering service providers developing new offshore platforms means implementing a new design philosophy that centres around lowering emissions at all the stages of platform's life – from supply chain to decommissioning. And while there is no set route to building a sustainable solution, there is a set destination – an offshore platform which minimises its environmental impact as much as possible.

**Find out how we can help you meet today's sustainability demands**

**Contact us to learn more**

### About Aquaterra Energy

From seabed to surface, oil and gas to wind and hydrogen, Aquaterra Energy is the offshore energy industry's first choice for offshore products, systems, and projects around the world. Swift, flexible, and responsive, Aquaterra Energy's engineers and analysts create the solutions customers need, while delivering operational improvements, efficiency gains and supporting decarbonisation efforts – whatever their circumstances.

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