

GREENTECH 2023: IN DISCUSSION WITH MOTT MACDONALD AND ENVISION DIGITAL





Craig Lucas, Director of Energy Transformation, Mott MacDonald, and **Tim Naylor**, Managing Director for the UK & Ireland, Envision Digital

At Port Technology International – PTI's GreenTech 2023 event in Hamburg, **Craig Lucas**, Director of Energy Transformation at Mott MacDonald and **Tim Naylor**, Managing Director for the UK & Ireland at Envision Digital, met with the Editorial team at PTI to shine light on the future of sustainable technology and its role in building a greener world.

How have Mott MacDonald and Envision Digital impacted the ports industry?

CL: We have been involved in port master planning for many years, including design and asset management for Ro-Ro, cruise and container terminals, as well as across the wider mixed economy of port operations. Our ports and maritime team have been working with owners and operators worldwide to accommodate larger vessels, upgrade dockside technology and enhance operational efficiency. And more recently we've been developing solutions for provision of green electricity, hydrogen and other green fuels. That includes the NorthH2 and North Sea Renewables Hub wind to hydrogen projects in north Europe, and the Tees Valley integrated hydrogen pilot project in the north east of England. And in the US we're working in Seattle on electrification of the ferries working in Puget Sound. In every part of the sector our clients are looking at the same questions.

TN: We work with companies such as PSA and Port of Antwerp, organisations looking to

RIGHT
Overview of Port of Southampton.



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decarbonise their port operations and create new opportunities in green supply chains. We provide a digital platform powered by artificial intelligence (AI) and the Internet of Things (IOT) with pre-built decarbonisation and digitalisation applications, a

complete suite of connectivity and device management, application enablement and analytics capabilities. Ports are then able to manage and optimise the energy consumption and carbon emissions across their infrastructure.

How did the relationship with PSA start?

TN: PSA is on a net-zero journey, and we started partnering with them four years ago. This has been a multi-phased net zero technology rollout, with each phase building on and enhancing the benefits from the previous stages. We started with a solar project when they were looking to decarbonise their energy supply through on-site generation. This was important because they were already electrifying critical infrastructure. Then that expanded into broader energy management and orchestration, which delivered real, cashable savings through peak shaving. The energy flexibility and resilience were enhanced through the deployment of onsite battery storage. The challenge all ports face is that they must always be available, operating and performing. So, it's not easy to change and introduce new things, particularly if they are intermittent, like renewables. Wind doesn't always blow, sun doesn't always shine. Therefore, we brought in digital technologies to assist in managing the port's energy system, balancing supply from on-site sources and the grid with demand.

Ideally, you want to be able to capitalise on the port's flexible demand, using your own renewable electricity whenever possible, but selling any surplus to the grid. And with energy storage, buying grid electricity when the price is low for use when your own demand peaks. Digital systems enable a holistic approach to infrastructure, energy, carbon and cost.

CL: Depending on the regulatory model, self-generation can be of substantially better value than buying electricity from the grid. In

the UK, for example, it can be up to a quarter cheaper to self-generate. Therefore, every green electron you can produce is saving cost and adding value to your business. In addition, there is a strong resilience argument to be able to service some of your energy demand from sources either on or near site.

TN: On site generation improves energy-security and operational-stability. Making and consuming your own green electrons is cheaper and makes your operations more resilient.

How are you assessing the sustainability landscape currently?

CL: Infrastructure owners are taking sustainability seriously. For a while we saw sustainability strategies that didn't translate into action. Now we're seeing real capital programmes with defined execution plans. This shift has been driven partly by investor pressure and the need to reduce operating costs, but also by customer demand. As an example, ports that can offer clean energy supplies to their tenants at a good price are enhancing the value of their business and ensuring they can retain good quality customers.

TN: We've got a little over six years until we exceed the carbon budget for limiting climate change to 1.5°C. Beyond that, catastrophic runaway scenarios start to play out. Setting targets for 2040 and 2050 is fine but decisive action this decade is critical. In the past five years we've seen many feasibility studies, pilots and proof of concepts but the maritime sector now needs to significantly scale up these

initiatives at speed. To do that effectively, we need to collaborate, which is precisely what events like GreenTech encourage. They're a forum for sharing ideas and experience of how to best scale up net-zero technologies in practice.

CL: In the past, renewables required government subsidies to be financially viable. However, the cost of renewables has reduced significantly. Corporate power purchase agreements (PPAs) have become a bankable investment, and companies can now invest in subsidy-free renewable energy projects, which are fundable and bankable. It opens new opportunities for blue-chip companies such as ports who have the capacity to consume their own energy.

How has Mott MacDonald changed as a company over time?

CL: Historically our energy business has been very diverse, covering both fossil fuel and non-fossil fuel energy systems. We're still active in the mid-stream gas market in regions where it is a transition fuel source, noting also that energy pipeline, facilities and gas storage engineering skills will be essential as the future energy system develops, including hydrogen, carbon capture and storage, etc. We're also transitioning our liquid fuel skills and expertise to new, lower carbon markets such as the potential methanol has to offer the shipping industry.

We have been the world's leading technical advisor for renewable energy projects for a couple of decades; we worked on the first pumped hydro storage

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energy projects 50 years ago and that technology is now undergoing a renaissance internationally. We're also heavily involved in the offshore energy market (both offshore wind and offshore pipeline and power interconnectors), battery and compressed air storage, as well as being increasingly involved in enabling hydrogen.

In the last decade we've grown our own digital business that's geared to delivering better projects more efficiently, and maximising the performance of buildings and infrastructure in use. Solutions to enable energy transition are part of our digital capability. We're investing in new knowledge areas and partnerships, such as the partnership between Mott MacDonald and Envision Digital.

Our clients face a potentially bewildering range of energy challenges and solutions. For

many of our clients, energy is not their core business, so we're here to help them select, integrate and manage the right solutions for them. We're here to help them make a successful transition towards a sustainable future.

TN: We've always been a net-zero technology company. We started off in wind energy, broadening out into solar, electric vehicle charging, batteries for electric vehicles, energy storage, and smart controls for cities, buildings, and net-zero industrial parks. Decarbonisation is not a single dimension – there are complex interdependencies between infrastructure, energy, carbon that must be managed holistically to ensure efficient operations. It's essential to take all of these dimensions into consideration to get them to work together at the same time as they

are systematically eliminating carbon intensity.

And that's where ports have a particular challenge, because they don't have huge domain experience in how to deploy many of these new technologies and how to integrate all of that with the existing infrastructure they've got on site, without disrupting their core operations. That's why Mott MacDonald and Envision Digital are working together. Clients get deep domain expertise in port design, engineering and programme management, plus the digital expertise to get the best out of new net-zero technology investments. Working together provides our clients with an essential combination of skills to integrate those new technologies into their existing infrastructure and accelerate more rapidly towards net zero.

MAIN

Overview of Port
Botany





CL: Historically we've had a big transport business and a big energy business. The boundary between the two is dissolving. Infrastructure clients are having to understand their energy supply chain as never before, while energy clients see net zero as a growth market. For example, some of our ports clients have the opportunity to become part of the offshore renewable supply chain, whilst some of our largest energy clients are looking to bring their investment and expertise to support ports on their transition journey.

What does it mean to be sustainable for a company like Envision Digital?

TN: Our clients generally have a strong sustainability agenda at board level. They realise it

goes well beyond compliance, it presents a commercial opportunity. Important stakeholder groups such as customers, investors and regulators are requiring that they move in that direction. They come to us to help accelerate their journey because we know how to apply the net zero technologies they need at scale. For us, sustainability is enabling our clients to move faster on their particular journey.

CL: Infrastructure plays a critical role in the transition towards sustainable energy, and we see the commercial opportunities for our clients in making that transition. An increasing number of projects are driven by offshore wind logistics, as clients look to establish themselves as go-to locations for this market. And net-zero clustering is becoming more prevalent,

ABOVE
Overview of London Gateway.

with ports looking to tap into the commercial opportunities that arise from them. As a consultant, we often work to convene projects, bring partners together, and facilitate collaboration towards achieving a common goal. Our role is to help our clients identify and leverage commercial opportunities that arise from the transition to sustainable energy.

TN: Another key topic is the authenticity and transparency of companies' claims of being green. Public sentiment is strongly in favour of sustainable, responsible business. Companies that aren't completely transparent risk being accused of greenwashing, so ensuring you have the systems in place to evidence the provenance of your carbon data coming directly from equipment becomes very important.

“INFRASTRUCTURE PLAYS A CRITICAL ROLE IN THE TRANSITION TOWARDS SUSTAINABLE ENERGY, AND WE SEE THE COMMERCIAL OPPORTUNITIES FOR OUR CLIENTS IN MAKING THAT TRANSITION.”

What does success look like for ports, energy companies and Mott MacDonald this year?

CL: Mott MacDonald's corporate strategy places a strong emphasis on energy as an enabler across all other sectors. The 'new energies' part of our business is growing healthily above inflation and we're looking to continue that trend. The key will be focusing on clients' needs, providing a universal offering that helps all clients with energy, digitalisation, and carbon.

We are leveraging our existing expertise and relationships in all infrastructure sectors, including ports. We have new thinking and solutions for existing clients; and approaching the sector differently will open up new relationships with clients we haven't previously worked for, we expect.

TN: Success for Envision Digital is determined by the impact we have on our customers business - specifically their carbon intensity KPIs. It's about making a real difference. Success is achieved when our software helps make genuine, measurable improvements to a company's operational infrastructure to reduce their carbon intensity and improve their cost-efficiency. This can involve harnessing renewable energy, battery storage, electrification of vehicles and heating, improving the use and maintenance of infrastructure, and digitising operational processes at scale.

I believe that the partnership between Envision Digital and Mott MacDonald provides clients with a unique combination of infrastructure and net-zero tech expertise gives us the ability to help our customers achieve their decarbonisation goals faster, cheaper and with less risk. We aim to successfully implement net-zero programmes at several large ports and airports this year together.

CL: We're acutely aware of the social and environmental imperative to decarbonise. This is a journey that society is passionate about. It has to succeed.

ABOUT THE AUTHORS:

Craig Lucas is a chartered electrical engineer by profession, with 30 years' experience, mostly in the energy industry, but also in rail and telecoms sectors. His experience ranges across sector management, regulation and policy, especially thinking about how new technology will transform the energy system, and the business models of the players in the sector. Craig works for Mott MacDonald as Director – Energy Transformation. He is responsible for developing a global response to market transition, leading development of corporate strategy in relation to digital services and energy, and also in developing energy services for Mott MacDonald's wider infrastructure client base.

Tim Naylor has over 25 years of experience in supporting digital transformation across multiple industries, markets and businesses. Most recently he has been focusing on renewable energies, smart cities, smart buildings, e-mobility technologies and decarbonisation. In 2015 he joined Envision Digital the global leading energy internet service provider. His mission is to help companies harness the potential of AIoT (Cloud Computing, IoT, Big Data and Machine Learning) to simplify their operational systems and processes, radically accelerate innovation, and transform the profitability of their business on the path to Net Zero.

ABOUT THE COMPANIES:

Mott MacDonald is a £2 billion (\$2.6 billion), 18,000 person, global engineering, development and management consultancy, with a 150 year heritage of excellence and innovation in transport, energy and water. The company guides projects through feasibility studies, business case development and environmental and social impact studies, design, construction, integration, operation and asset management. Its core engineering skillset is complemented with digital expertise driving efficiencies and value over the whole asset lifecycle.

Envision Digital is a Singapore-headquartered artificial intelligence of things (AIoT) company with global reach. It applies digital technology to improve the performance of physical assets, delivering value for users, owners and investors. EnOS, Envision Digital's proprietary AIoT operating system, connects and manages more than 110M smart devices and 360GW of energy assets globally. The impact and promise of its technology earned Envision Group a place in Fortune's 2021 Change The World list. The company has 800 employees.