UK's Net-Zero Strategy Must Deliver More Help for Switch to Green Manufacturing

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In November Dr Steve McCabe and I launched our latest book, *Green Manufacturing, What this involves and how to achieve success* to tie in with COP26 being hosted in Glasgow. This publication followed our previous one, *Exploring the Green Economy, Issues, Challenges and Benefits*, launched in July, with both published by Bite-Sized Books.

With manufacturing accounting for 16% of the Midlands economy, production-related output accounts for a third of output and distribution activities a further 23% of economic value. Over half our economy, a total of 56%, is closely linked to our productive strengths in the Midlands and with UK manufacturing accounting for 13% of greenhouse gas emissions, the transition to net-zero production is a crucial challenge and one that I've found manufacturers are eager to tackle. It's a strongly held view that many new business opportunities are opening up, but most manufacturers appear to be only moderately able to take advantage of these, primarily due to a lack of funding for transition, noted in recent surveys as the primary barrier to green growth.

Ahead of COP26 in October 2021, government published its 368-page 'net zero strategy'. The plan promoted a fully decarbonised power system by 2035, all heating appliances in homes and workplaces would also be low carbon by 2035. A £450m three-year boiler upgrade scheme was announced, along with a decision on a new large nuclear plant by 2024 and the delivery of 40GW of offshore wind by 2030. With £26bn of funding due from the public sector between 2021 to 2025 and more than £60bn expected from the private sector, it was hailed as a 'genuine step forward' by Lord Deben, Chair of the Climate Change Committee, with others stating it didn't go far enough, especially in light of the Intergovernmental Panel on Climate Change report, released in August, referred to by UN Secretary General António Guterres, as a "**code red** for **humanity**".

In light of the pressing timescales and the call for action over the coming decade as a priority, our book draws on case studies from manufacturing businesses and representative organisations which have been tackling these challenges head on. It is perhaps not surprising that quite a number are from the Midlands and it is lessons from these businesses that form the basis of this short article. It also promotes a checklist of actions for manufacturers embarking on this journey. These include:

- Carrying out an energy audit
- Implementing an environmental standard such as ISO 14000
- Reducing waste and packaging as part of a circular economy approach
- Benchmarking against others who've already been successful
- Getting everyone involved to harness ideas from across your company
- Looking to the supply chain for emissions reductions
- Seeking external advice and guidance as well as committing to externally monitored goals
- Promoting carbon eco-kite labelling

KPM Marine, founded and jointly owned by Jules Morgan, has been tackling environmental challenges for 27 years with a mission to ensure his business would be as environmentally conscious as possible. The business designs and produces vessels servicing wind turbines, delivering between 12-24 technicians daily to the turbines via catamarans of between 20-30m long, each with two 1500 horsepower engines burning 3000 litres of diesel a day 7 days a week.

Jules Morgan has developed six environmental design protocols for his business and an overarching rider regarding the allure of unproven technologies in highlighting the need to draw on robust Technology Readiness Levels (TRLs) in our shared quest for net-zero. These protocols cover:

- light weighting
- eliminating Volatile Organic Chemicals (VOCs)
- designing for recyclability
- ensuring end of life value in all product components
- reparability
- localisation – with 96% of components sourced from local supply chains, avoiding an additional imported carbon footprint.

As Jules Morgan puts it:
"When KPM set out with these protocols and developed the products, our competitors laughed at us, but they are not laughing anymore. No longer can business ignore the environmental aspects of their operations whilst not pushing the boundaries and focusing only on the short term profit imperative whilst expecting the tax payer and local authorities to clean up their mess, or turning to developing countries to be their dumping ground at little or no cost to themselves.
"The message is to make progress quickly companies can do very simple things to make a positive environmental impact and not all the solutions require re-invention and technology, but creative thinking.
"Fast forwarding to today KPM have customers saving £100,000's of pounds on fuel bills per year per vessel and KPM have dominated the windfarm service vessel market and the fast craft market globally."

David Nieper Ltd is a family run clothing and textiles manufacturer based in Alfreton, Derbyshire. Their CEO, Christopher Nieper OBE, runs this family-owned business employing 300 people across five factories whilst also investing in local education, sponsoring the local secondary school, the David Nieper Academy, and having been awarded the Queen's Award for Sustainable Development, as well as being voted 'Sustainable Manufacturer of the Year' by MAKE UK. From the seventies onwards fashion businesses have off-shored production led by access to cheaper labour, with fashion and textiles recognised as one of the world's most polluting industries contributing an estimated 1.2bnT of CO2 a year – more than international aviation and maritime shipping, with fashion alone accounting for between 5-8% of global greenhouse gas (GHG) emissions annually.

Having commissioned a report in 2019 comparing the environmental impact of offshore fashion manufacturing to manufacturing clothes in Britain, University of Nottingham's Energy Innovation and Collaboration team revealed that clothes made in the UK produce 47% fewer GHG emissions. Following this the company invested £4.5m in a solar powered fabric print factory helping to bring textile manufacturing back to Britain with the new factory saving 50-60 litres of water per meter of

fabric compared to traditional screen printing. Non-GMO cotton fabrics are used, dying processes draw on environmentally sound technologies saving 280,000m3 each year compared with traditional techniques.

The company operates a zero waste to landfill policy and in 2021 they joined the SME Climate Hub as part of the UN Race to Zero campaign, pledging to cut CO2 emissions by half by 2030. In order to help consumer choose more sustainable fashion and clothing options Christopher Nieper has invested through his foundation in spearheading the development of an industry-wide eco-kite mark helping consumers to understand 'at a glance' how environmentally-friendly production of their garment has been by referring to a carbon checker label modelled on that already available when purchasing white goods.

Christopher Nieper noted:
"The opportunity to improve fashion is huge. Wearing apparel accounts for 26,000 jobs in the UK but 97% of what we wear is imported. Therefore, simply a small increase in the UK-based manufacturing could generate tens of thousands of new jobs and income in the UK as well as addressing carbon emissions from fashion and textiles."

In the Black Country Ben Towe, Group MD of **Hadley Group,** has written about the challenges of steel manufacturers in reducing emissions. The company has looked to reduce waste and increase the use of recycled steel in products and components, drawing on CAD for improved consistency and on virtual simulation modelling to ensure maximum efficiencies in materials produced and used. Ben notes:

"The environment is an important part of our philosophy and that can be seen within the manufacture of our products. We seek to reduce, through our design process, the material content of our products and employ the Hadley Group patented processes where applicable. When applied to our products this delivers equal strength from a lighter gauge material, resulting in a more cost-effective end product that absorbs less raw material and energy within the production process and is stronger and 'Greener by Design' than equivalent products."

Benefits to customers include:

- Vehicle crash / crumple zone meeting appropriate performance standards manufactured using less material making it lighter, lowering product weight and improving fuel efficiency
- Improving structural integrity through lighter products produced through the company's patented processes
- Requiring less weight and resources to achieve same performance levels of comparator products
- Using same weight and resources as comparator products but achieving superior performance metrics.

Ben Towe notes the medium-term market conditions required to continue to improve environmental outcomes, a feature feeding into automotive and transport production forming such a critical element of manufacturing in the Midlands:

"We need to see the creation of an environment where carbon-neutral steel is more competitive than steel which is not carbon neutral. This will mean creating a fair competitive landscape accounting for the global nature of the steel market, addressing domestic, import and export steel dynamics, as well as the distinction between primary and secondary sources required to make

steel. Producers will require access to sustainable finance, enabling innovation and long-term investments and of course the ability to access abundant, affordable clean energy infrastructures along with public instruments making the acceleration of innovative technology deployments required to ensure transitioning to carbon neutral steel-making is possible."

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