

2020 Sustainability Report



INTRODUCTION

SUSTAINABILITY REPORT

IES supports manufacturing worldwide, across a broad range of high technology industries; from aerospace to microelectronics, pharmaceutical and semiconductor. Since our establishment in 1991, we have partnered with the likes of HP, Rolls Royce, Xaar, and GE. Manufacturing is constantly evolving, and at IES we actively monitor the sector's ongoing issues and future prospects.

Sustainability is a key area of concern for manufacturers. Over Autumn 2020, IES carried out several polls to tap into industry thinking. We posed questions to manufacturing professionals, relating to topics such as COVID-19 recovery, Industry 4.0 (the digitisation of manufacturing), and the future of the sector.

This inspired us to delve deeper into the sustainability work happening in manufacturing right now. Our 2020 Sustainability Report examines whether sustainability and post-COVID profitability can go hand in hand. We ask whether the pandemic could influence manufacturers to become more sustainable. We provide an overview of the various sustainability initiatives offering grants and support to manufacturers, and look at the changes which manufacturers are making to become more sustainable. We also canvas our client base in order to track their approach to sustainability.

This report seeks to share learnings and inspire others by honing in on some of the most fascinating sustainability developments in UK manufacturing.



**In one poll, IES asked: "Do you think sustainability is enough of a focus for your company?".
67% of over 5,000 respondents answered 'no'.**

SECTION 1

SUSTAINABILITY AND COVID-19

Has the pandemic cemented the industry's commitment to a more sustainable future? It might seem that there are no winners from a global pandemic, but one of the few beneficiaries might be the environment.

Is manufacturing set for a 'green recovery'?

The UK is hoping for an economic rebound following the economic impact of the COVID-19 pandemic. We've seen plenty of discussion around a 'green recovery', which would incorporate more sustainable practices into the rebuild. November 2020's Green Entrepreneurship¹ report, commissioned by the Entrepreneurs Network and the Enterprise Trust, found that more than six in ten (61 per cent) of SMEs felt that a move towards a greener economy represented a business opportunity.

Does this initiative have buy-in from manufacturers? Firstly, it is important to understand the position in which UK manufacturing finds itself in the wake of the pandemic. An October 2020 study² found that one in two manufacturers has already made redundancies, and that one in five plans to make further redundancies in the next six months. So, are manufacturers confident that a move towards sustainability can play a part in their recovery plans?

For the majority of manufacturers, the answer appears to be 'yes'. The Carbon Trust looked into attitudes towards sustainability³, and found that even for companies drastically affected by the COVID-19 pandemic, sustainability was still regarded as being a priority. Some 69 per cent of large companies majorly disrupted by the pandemic - interviewed across sectors including manufacturing and engineering - said that environmental management and/or sustainability would become "significantly" or "somewhat more" important as the recovery takes shape.

Looking at the sector-specific data for manufacturing, the industry seems overwhelmingly to be embracing sustainability as a key part of COVID-19 recovery. Asked by The Carbon Trust's *Corporate Attitudes Towards Sustainability 2020 survey*, "How are your environmental management and/or sustainability priorities likely to change as a result of COVID-19?", 76 per cent of manufacturers said that they would become "significantly" or "somewhat more" important.

1. 61 per cent of SMEs feel greener economy represents a business opportunity, *Green Entrepreneurship report*, The Enterprise Trust, November 2020

2. One in two manufacturers have already made redundancies since outbreak of COVID-19, *MAKE UK Manufacturing Monitor*, MAKE, October 2020

3. 69 per cent of large companies majorly disrupted by pandemic said that environmental management / sustainability would become "significantly" or "somewhat more" important in recovery, *Corporate Attitudes Towards Sustainability 2020*, The Carbon Trust, 2020

SECTION 1

SUSTAINABILITY AND COVID-19

Improving energy efficiency

Energy efficiency has a huge role to play in the sustainability drive, and there is evidence to suggest that manufacturers are prepared to make the financial commitments necessary to affect change. A survey undertaken by Make UK⁴ found that 54 per cent of manufacturers have already taken or are planning on taking energy efficiency action to reduce energy consumption in production processes, and 30 per cent have made energy efficiency investments in the last 12 months.

Some of the changes have already been led 'from the top'. In 2019, the UK became the first major economy in the world to pass a net-zero emissions law⁵, setting in stone a target which requires the country to reduce all greenhouse gas emissions to net-zero by 2050. With air blowers and compressors believed to account for 10 per cent of all industrial energy use in Europe⁶, the European Commission (EC) conducted its Ecodesign Project Lot 31 study⁷ in order to shape future legislation relating to the improvement of overall compressor efficiency. It is expected that the UK will look at introducing similar regulations.

Sustainability in manufacturing is supported by a number of schemes, grants and initiatives in the UK. We will examine these funding opportunities in Section 2.



4. 54 per cent of manufacturers have taken, or are planning energy efficiency action, Towards a Net-Zero Carbon Manufacturing Report, MAKE, May 2020

5. UK becomes first major economy in the world to sign pass a net-zero emissions law, Department for Business, Energy & Industrial Strategy, June 2019

6. Air blowers and compressors account for 10 per cent of Europe energy use, The Manufacturer, June 2020

7. Ecodesign Preparatory Study on Compressors (ENER Lot 31), European Commission, June 2017

SECTION 2

HELPING MANUFACTURING BUSINESSES TO BECOME MORE SUSTAINABLE

Does smarter manufacturing mean more sustainable manufacturing? Many of the ways in which manufacturing is being modernised are also making production processes greener.

Driving sustainability through innovation

Robotic methodologies are helping to achieve sustainability in manufacturing, reducing material wastage in processes such as metal welding, using visual inspection sensors. Artificial intelligence (AI) has the potential to be a great problem solver for sustainable manufacturing, helping to address inefficient supply chains and unequal energy resource distribution, while offering predictive maintenance. Internet of Things (IoT) technology is providing a higher level of energy consumption awareness in factories, and is enabling the identification of opportunities for energy saving.

Manufacturers can obtain funding and grants specifically to support the implementation of creative and innovative ideas, including new tech. Among the schemes open to manufacturers in the UK are:

1). Manufacturing Made Smarter

Part of the government's Innovation Funding Service, the Manufacturing Made Smarter programme has pledged £300 million in public and private funding to "boost the UK's manufacturing capabilities". While upping productivity, the support is intended to help slash carbon emissions and create new "highly skilled jobs". The first wave of funding has been spread across manufacturing projects of various sizes, including 30 SMEs, 29 larger organisations and nine universities.

Apply here:

<https://www.gov.uk/guidance/innovation-apply-for-a-funding-award#applying-for-a-competition-on-the-innovation-funding-service>



SECTION 2

HELPING MANUFACTURING BUSINESSES TO BECOME MORE SUSTAINABLE

2). Manufacturing the Future Grant

The Manufacturing the Future Grant is offered by the Engineering and Physical Sciences Research Council (EPSRC), and supports cutting edge research and skills development. Among the research goals of the grant is to help achieve a future in which “manufacturing industries will be able to meet the needs of present sectors/customers without compromising the ability of future generations to meet their own manufacturing needs”, and where “resource usage, resilience and security are transformed and where business models, manufacturing processes and product value/ownership are redefined”. The EPSRC’s backing covers the full manufacturing spectrum, from simulation and design to production, fabrication, systems and services.

Apply here:

<https://epsrc.ukri.org/funding/>



SECTION 2

HELPING MANUFACTURING BUSINESSES TO BECOME MORE SUSTAINABLE

3). R&D Tax Credits

Manufacturers which have recently introduced new manufacturing processes or improved products – including those designed with sustainability in mind – could benefit from the government's R&D Tax Credits. The R&D Tax Relief incentive encourages manufacturers to invest in R&D activities and innovation, and permits up to 33.35 per cent of a company's R&D spend to be reclaimed as a cash repayment. There is a wide range of activities within manufacturing which qualify for R&D Tax Credits; from feasibility studies to investigating new technologies, testing and managing projects. Expenditure which can be claimed encompasses everything from staff costs to software licenses and consumable items such as materials, equipment and energy.

Apply here:

<https://www.gov.uk/guidance/corporation-tax-research-and-development-rd-relief>



SECTION 3

HOW IS MANUFACTURING APPROACHING THE SUSTAINABILITY DRIVE?

According to our poll, there is an acceptance by manufacturers that they could do more to implement changes in the future, but how is the industry approaching the drive for sustainability at present?

Major UK manufacturers are making changes to ensure their businesses are more sustainable. Here are some of the best examples:

Low emissions technology

Rolls-Royce is pushing sustainability forward in aviation with the latest phase of testing for its low emissions technology jet engines⁸. Tests have involved the ALECSys (Advanced Low Emissions Combustion System) demonstrator engine, as the British manufacturer continues its efforts to reduce emissions from gas turbines. Rolls-Royce has also been active in supporting increased sustainable aviation fuel use, and research into disruptive propulsion architectures.

Regenerative supply chains

Unilever, the multinational consumer goods producer with headquarters in the UK, has pledged to promote

regenerative agriculture and end its association with deforestation. As part of its target for net-zero emissions for its products by 2039, powered by a €1bn climate and nature fund⁹, the corporation will also transition to biodegradable ingredients. The net-zero emissions aim extends right down the supply chain; from the sourcing of materials used in production through to the point of sale. Unilever has also publicised its intention to launch projects for reforestation, wildlife protection, land restoration, water preservation and carbon sequestration; it is expected that these initiatives will see the organisation work alongside farmers and owners of smaller agricultural holdings.

Manufacturers can now utilise technology to give them a more active role in ensuring sustainability across their supply chain. Data from satellite imagery and radar gives companies the means to monitor land cover change, allowing intervention when there are signs of forest cover loss.



8. Rolls-Royce takes next step in sustainability drive with new low-emissions testing, *Rolls Royce press release*, August 2020

9. Unilever sets out new actions to fight climate change, *Unilever press release*, June 2020

SECTION 3

HOW IS MANUFACTURING APPROACHING THE SUSTAINABILITY DRIVE?

Reducing end-user wastage

Many manufacturers producing consumer products have launched schemes designed to reduce wastage by the end-user. Walkers have begun a crisp packet recycling scheme, Levi's are offering a 10 per cent discount to customers who bring back their unwanted old garments, and Nike have set up a 'Reuse-A-Shoe' initiative which collects any type of old footwear and turns them into granules that can be used in multiple manufacturing processes.

Renewable energy

UK manufacturers are demonstrating a willingness to invest in renewable energy to reduce their carbon footprint. Toyota UK has installed solar panels covering an area equivalent to eight football pitches at its Deeside plant, generating 3,475,000kWh per year; enough energy to build 22,500 engines¹⁰.

But it isn't just renewable sources of electrification which are allowing manufacturers to become more sustainable. New designs of solar thermal systems are serving applications which require temperatures up to 400°C¹¹ in less energy-intensive industries, while biomass is being used as a replacement for fossil fuels in localised energy production.

Sustainable alternatives

In textiles, manufacturer Ananas Anam has produced Piñatex, a sustainable textile which has been dubbed as 'the vegan leather'. While the production of leather and its synthetic alternatives can damage the environment, the manufacturing process for Piñatex requires only low water use, contains no animal products or harmful chemicals, and produces a low level of wastage. Piñatex is manufactured from cellulose fibres that have been extracted from pineapple leaves, polylactic acid, and petroleum-based resin. Among the brands to use Piñatex are manufacturers of interior furniture, footwear, clothing and fashion accessories.

Other green alternatives for leather include biodegradable fungal mycelia-based materials¹², which are manufactured from a mushroom-derived, woven cellular microstructure.

10. Toyota solar panels generate 3,475,000kWh a year, *Toyota*, December 2020

11. New designs of solar thermal systems are serving applications which require temperatures up to 400°C, *Science Direct*, June 2016

12. Leather's carbon footprint is immense, but this plant-based alternative could be the way forward, *Vogue Magazine*, February 2020

SECTION 4

IES CUSTOMERS TAKING THE LEAD ON SUSTAINABILITY

An insightful snapshot is provided by the activities of four IES clients. How are their sustainability efforts tallying with the wider movement within manufacturing? We found out what they are doing to make their businesses more sustainable, and the results these activities have produced.



Infineon

The initiatives undertaken by manufacturing's sustainability leaders require changes to be made in many areas of an organisation – from environmental sustainability to supply chain management and business ethics. This is exemplified by the sustainability program of semiconductor solutions provider Infineon, who rank in the 10 per cent most sustainable companies in the world¹³.

Infineon has committed to become carbon neutral by the year 2030. It is taking steps to cut its emissions by 70 per cent from 2019's levels by 2025. The organisation views sustainability as the "symbiosis between economy, ecology and social engagement". It has set up the Infineon Integrated Management Program for Environment, Energy, Safety, and Health, to ensure that targets are met across areas such as water management, energy, greenhouse gas emissions and waste management. When vetting suppliers, it ensures that environmental protection is placed as a high priority within its Principles of Purchasing.



Newport Wafer Fab

Newport Wafer Fab is no stranger to pioneering initiatives, having been one of the UK's first semiconductor operatives, and a member of the Wales SE Wales Compound Semiconductor Cluster. NWF has won funding from the non-profit Advanced Propulsion Centre UK (APCUK) for the analysis of scale-up production solutions for low carbon technologies. No less than 31 projects will benefit from a £17 million investment into feasibility studies for green manufacturing. Among the projects is a study into the viability of production scale-up for semiconductor technologies which are seen as key in reaching the government's Net Zero 2050 target; 200mm wafer manufacture for Silicon Carbide and GaN on Silicon.

13. Infineon ranks among the 10 per cent most sustainable companies in the world, *Infineon*, December 2020

SECTION 4

IES CUSTOMERS TAKING THE LEAD ON SUSTAINABILITY



Rapiscan Systems

Security screening solutions provider Rapiscan has made strides in reducing carbon emissions and waste, while using local and sustainable materials where possible. Adhering to the Waste Batteries and Accumulators Regulation 2009, they take back waste industrial batteries which they have produced and supplied to customers. At the request of customers, they can take back any waste industrial batteries for proper treatment and recycling.



Catalent

Catalent, the life science solutions provider, is an example of a manufacturer with a 21st century sustainability focus. It minimises its environmental footprint with a drive to reduce its CO2 emissions at its manufacturing sites by 15 per cent, cut down on waste generation, and manage water use responsibly. But Catalent also offers an illustration of a commendable 'grassroots' approach to sustainability, which has the ability to communicate important values to the wider world via public relations. Catalent employees form 'green teams' which participate in clean-ups at community sites such as local beaches. The importance of manufacturers 'rolling their sleeves up' and engaging in high visibility sustainability initiatives at community level should not be overlooked.

SECTION 5 CONCLUSION

Mindful of the sustainability activities we have tracked in manufacturing, the 67 per cent of poll respondents who said that sustainability was not enough of a focus for their company can be seen in two ways. Firstly, it shows that much more can be done, but it also demonstrates a willingness to do more, and this determination is reflected in many aspects of our findings.

Sustainability initiatives in 2020 are target led, and not confined to a narrow scope. They encompass every element of a manufacturer's activities – from production to wastage; from energy choice to energy efficiency; and from the supply chain to the customer.

As we look past the post-pandemic landscape towards the government's Net Zero 2050 target, our findings have shown that manufacturers do not typically think of changes to become more sustainable as a financial hindrance. Rather, they are embracing the economic opportunities which are presented by these changes, as the sector seeks to become smarter and more efficient. As long as reducing environmental impact goes hand in hand with innovation, the outlook for sustainability in manufacturing looks promising.





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