

Growing a greener tomorrow

Joe Kempton looks at 10 tech businesses that want to help save the planet

Before Covid-19 swept the globe, concern about the environment had reached a tipping point. No longer were impassioned pleas coming only from committed campaigners such as Sir David Attenborough and Greta Thunberg. Instead, mainstream politicians and business leaders were also applying their influence. The British government became one of the first in the world to set a target of zero greenhouse gas emissions last year. In January, Larry Fink – chief executive of BlackRock, the world's largest fund manager – called climate change “a structural long-term crisis”.

It is clearer than ever that business needs to shoulder its responsibilities to the environment – but it is also clear we need to recognise where business is helping. We must champion, in particular, those entrepreneurs and emerging companies that are setting out on a course that aims to protect the environment and promote a sustainable path to prosperity.

That is why we are proud to launch the 10 Green Tech to Watch, which identifies a cross-section of privately-owned UK companies that are developing technology to help mitigate or reverse the effects of human activity on the environment.

Among the 10 firms stepping up to the challenge is Aceleron, which recently raised £2m from investors BGF – which sponsored this research – and Mercia Asset Management.

Co-founders Carlton Cummins, and Amrit Chandan, both 31, represent a new generation of entrepreneurs, combining a commitment to ethical enterprise with the latest technical skills. Cummins began his career working for a solar power firm in Barbados, while Chandan has a PhD in fuel cell technology from Birmingham University. Aceleron is creating lithium batteries that are compressed together, rather than glued or welded; this makes them easy to take apart and repair, modify or recycle.

Batteries look set to play a key role in reducing carbon emissions. Abingdon's OXIS Energy is developing lithium-sulphur batteries, which it says are an ideal

fuel source for electric vehicles, aeroplanes and maritime vessels.

Ventilation systems specialist Monodraught also reflects the importance of energy efficiency to humanity's future. It designs and manufactures low-energy ventilation, lighting and cooling systems for buildings, and claims that it can reduce lighting costs by as much as 75%.

Two firms are working to fight large-scale carbon dioxide emissions. Carbon Clean says its technology cuts the cost of CO₂ capture from industrial emissions by more than half, and has raised £25m to date. Meanwhile, London's Whitefox Technologies has developed filters to remove excess water from biofuel production, increasing fuel purity and reducing carbon emissions. It says its American installations have saved 72,000 tons of CO₂ – the equivalent of planting around 800,000 trees.

It can be difficult to store energy from solar and wind sources, which is one reason why Highview Power's eye-catching technology is attracting such credible investors as Sumitomo Heavy Industries. It uses spare electricity to cool and liquefy air, releasing it later to drive turbines and generate electricity during periods of peak demand. It has more than 35 global patents, and in June was awarded a £10m UK government grant to build a new facility at Trafford Energy Park in Manchester.

Responding to the need to create greener consumer products, EnvoPAP creates office paper and packaging materials from agricultural waste, and says its products have a 38% lower carbon footprint than conventional paper.

In Sheffield, Iceotope has attracted impressive international partners in French electrical engineering giant Schneider Electric and American components distributor Avnet. It uses liquid rather than air to cool servers in data centres, making them more efficient to run and using less power.

We would like to congratulate our inaugural 10 Green Tech to Watch, and hope to welcome some of them onto the main Tech Track 100 league table in the future as they attract more customers and scale up.



Carlton Cummins, left, and Amrit Chandan founded Aceleron in 2016; its sustainable batteries can be serviced, upgraded and recycled

BGF 10 GREEN TECH TO WATCH: RISING FIRMS THAT PROTECT THE ENVIRONMENT

Company	Green activity	HQ location	Financial year-end	*Latest sales (£000s)	Funds raised	Staff	Founded
Aceleron Claims to make the world's first serviceable, upgradable and recyclable lithium batteries, with applications including household energy storage. It was co-founded by CEO Amrit Chandan and CTO Carlton Cummins, both 31. Sales, including grant revenue, reached circa £1m in 2019; BGF invested £1.45m this year	Reusable battery developer	Birmingham	Dec 19	c*1,000	£2.9m	10	2016
Carbon Clean Says its process removes more than 90% of CO ₂ from industrial emissions, and has raised more than £17m this year – and £25m in total – from investors including America's Chevron and Norway's Equinor Ventures. Co-founded by chief executive Aniruddha Sharma, 33, and chief technology officer Prateek Bumb, 35	Carbon capture tech developer	Central London	Mar 20	1,508	£24.7m	17	2009
CoGen Its technology produces renewable energy from waste that would otherwise end up in landfill by partially transforming it into gas. Founded in 2014 by chairman David Pike, 67, and chief executive Ian Brooking, 50. Partners include Lockheed Martin and Balfour Beatty; investors include Canada's Stantec	Waste technology developer	Stoke-on-Trent	Nov 18	*10,342	n/a	19	2014
EnvoPAP Blends agricultural waste and wild grass fibres to create tree-free office paper and packaging materials, with customers including L'Oréal and Lloyds Bank. Chief executive Kaushal Shah, 28, founded the company in 2015 while he was a student at Southampton University. Investors include Founders Factory	Sustainable materials producer	Central London	Mar 20	1,933	£0.8m	24	2015
Highview Power Stores spare energy by cooling and liquefying air to -196°C, releasing it to drive turbines and generate clean electricity. Led by chief executive Javier Cavada, 44, the company raised £35m in February from Japanese manufacturing giant Sumitomo	Energy storage tech developer	Central London	Dec 19	**£10,000+	c£74m	40	2002
i2O Water More than 100 utility companies across 47 countries use its technology to monitor and control water supplies: customers include Anglian Water and the city of Cape Town. Led by chief executive Joel Hagan, 51, it has raised more than £31m from investors, including UK environmental tech investor Ombu	Water controls manufacturer	Southampton	Dec 18	3,124	£31m+	52	2005
Iceotope Its liquid cooling system reduces the need for fans in power-intensive data centres, cutting energy costs. Raised £6m in February last year from investors including Ombu and French venture capital firm Aster. The company is led by chief executive David Craig, 56	Liquid cooling technology	Sheffield	Dec 19	2,007	£14m	42	2012
Monodraught Waitrose, Ford and Ikea use its low-energy ventilation, lighting and cooling systems, which it says has saved 400,000 tons of CO ₂ over the past two decades. The company has raised £2.7m in funding to date, including from BGF, and is led by managing director Andrew McCubbin, 51	Sustainable ventilation specialist	High Wycombe	Dec 19	11,300	£2.7m	82	1974
OXIS Energy Developing lithium-sulphur batteries, which it says pack in five times more energy than lithium-ion batteries. Run by chief executive Huw Hampson-Jones, 65, it has raised £49m from investors including Brazil's Aerotec and South Africa's Sasol, and is building a factory in Brazil, scheduled to open in 2023	Lithium-sulphur battery manufacturer	Oxfordshire	Dec 19	2,288	£49m	80	2005
Whitefox Technologies Its filtering technology is used in countries ranging from Germany to Guyana to efficiently remove excess water from biofuel production. Founded in 2000 by chief technology officer Stephen Blum, 59, it has been led by chief executive Gillian Harrison, 46, since 2009. It is backed by private investors	Industrial membrane solution developer	Central London	Dec 19	5,687	£8.9m	29	2000

*Sales provided by company *Annualised **Includes a £10m UK government grant awarded in 2020



WHY BGF IS BACKING UK GREEN TECH

“As we come out of the Covid-19 crisis, a radical shift to new sectors of the economy is now going to occur much faster. Top of the list is the environment. Turning net-zero emission pledges into reality is a huge opportunity for investors, but it requires significant capital. BGF plans to increase investment into sustainable businesses from 5% today to up to 20% in the next 18 months. The 10 Green Tech to Watch is a great platform to showcase promising companies in this space.”

Stephen Welton, executive chairman

To be eligible for the **BGF 10 Green Tech to Watch** table, companies must be UK registered and privately owned, with their own patented technology and minimum sales of £1m, including grant revenue, and at a stage beyond start-up. The companies were identified by the Fast Track research team. The final judging was conducted by Mike Sibson of BGF and Hamish Stevenson, founder and chief executive of Fast Track, and associate fellow of Green Templeton College, Oxford University