

Technology Developer
Accelerator Programme

Helping to accelerate SME
innovations to market



ADVANCED
PROPULSION
CENTRE UK

Accelerating
Progress

Enabling UK SMEs to grow and prosper

We recognise the UK has a wealth of knowledge and expertise in its SMEs, which are important in building a vibrant supply chain. The Technology Developer Accelerator Programme (TDAP) supports SMEs, whether start-ups, spin-outs or more mature organisations, who have an early-stage transport technology concept and want to accelerate their route to market.

TDAP provides



A structured early-stage Accelerator Programme



Focused product and business approach



Independent expert consultancy, mentoring and support



A gateway-driven process



Up to £135,000 grant support (APC do not take equity stake)



Automotive industry networking



'SMEs play a crucial role in the low-carbon future of the automotive industry; by supporting companies at the beginning of their commercialisation journey we can ensure the UK stays competitive with some of the most exciting technological innovation in the sector.'

Josh Denne, Head of SME Programmes, APC

Up to £135,000 grant support
to develop your novel zero
emission enabling
automotive technology

Helping to accelerate innovations to market

Our TDAP initiative has been running for five years and we have seen four waves of technology developers go through the programme, benefitting from £5.4 million of funding support.

We have supported technologies from new energy storage and management systems, through to novel thermal control technologies, lightweight materials and even digital tool developers.

These businesses have often been able to understand new routes to market and take real meaningful steps towards their commercial goals.

£5.4 million
of funding support

TDAP benefits and impacts



Credibility boost through APC process



Technology advanced to TRL 4/5



Businesses feel accelerated route to market



Businesses leave TDAP with a robust strategy and a business model to take their product to market



57 businesses engaged, 27 completed the programme



Over £17m investment / debt raised



Businesses average 50% increase in headcount following TDAP

Mentoring, funding and support

TDAP is designed to help fast-track low emission technologies towards commercialisation. The programme provides mentoring as well as facilitating financial support for SMEs, helping bring forward their innovative technologies.

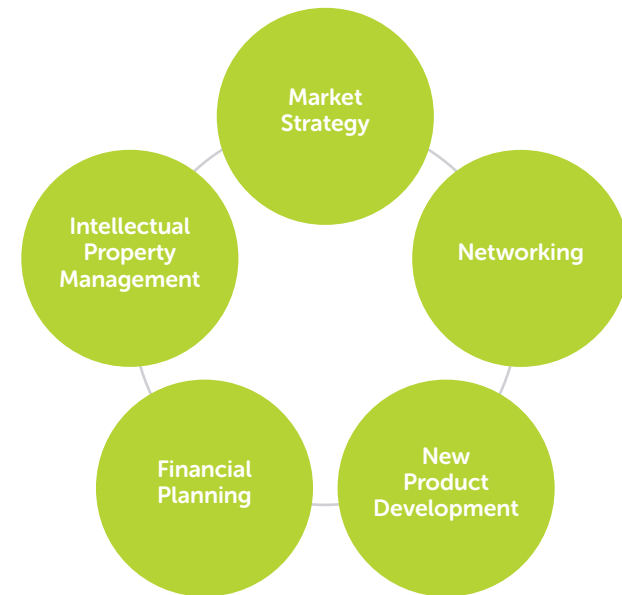
Through TDAP we provide financial and technical support, along with invaluable business development mentoring to help grow your SME. Our team of specialists have many years' experience in the automotive industry, bringing both product knowledge and industry understanding, allowing them to offer you visibility to a range of key industry players.

APC facilitates this support by providing up to £135,000 of grant benefit, on a match-funded basis. The programme is delivered by a dedicated team working in partnership with external Delivery Partners (DPs) to complete five specific focus areas over an 18-month phased process.

Participants work with the APC's Delivery Partners to:

- Understand the best application fit for their technology
- Develop their target market and route to market strategy
- Understand their Value Proposition
- Work on their IP strategy
- Understand their potential business model
- Develop a financial and investor plan
- Undertake a validation project to test their product and their business assumptions

Five specific focus areas



Who does TDAP support?

We are looking for SMEs that fit the following criteria:

The business

- Ambitious UK-based micro, small and medium-sized companies
- Technology developers able to benefit from programme activities, APC engagement and programme team expertise

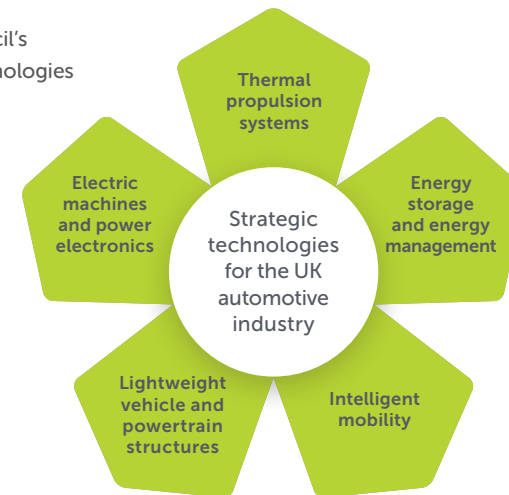
The technology

- Innovative automotive technology, products and services which:
 - Support zero emission vehicle operation, or;
 - Support the shift to net-zero carbon automotive products
- Aligns with one or more of the Automotive Council's five strategic technologies, or; outside of these areas but demonstrating a strong impact potential
- Development status of the technology should be TRL 2-4 (UK Automotive Council)
- On or off-vehicle technology eligible:
 - Software or hardware technologies
 - Full vehicles (including e-bikes, e-mopeds, etc.) are in scope, however the technology deployed within the vehicle must be innovative of itself and the application would need to show how the vehicle supports or accelerates the move to zero emission transport

APC's objectives

- Enable participants to accelerate their strategy, business case and technology development
- Anchor UK innovation, research and development and economic impact

Automotive Council's
five strategic technologies



TRL levels

1

TRL Level 1 – The light bulb moment

We've had an idea for a new technology. At TRL 1 we've identified new science, but we are not sure where it could be applied.

2

TRL Level 2 – Where can we use our idea?

Invention begins – we start to think about the potential practical applications for our new technology. Applications are still speculative at this stage.

3

TRL Level 3 – Test elements in isolation

Active Research and Development (R&D) begins – this includes analytical and laboratory studies to test the different elements of our idea in isolation.

4

TRL Level 4 – Connect the elements together

Our basic technological components are joined together to establish if they will work in harmony. Our lab model is relatively simple compared with the final commercial product.

Programme structure

The programme is delivered over three core phases. Each phase involves a number of activities designed to support participants in the five specific focus areas.

The APC understand that no two businesses are the same, and whilst there are common elements involved in the development of most business ventures, each will also have its own unique challenges. The programme is therefore formatted as a selection of essential activities as well as a 'menu of options' that can be specified by the Technology Developers (TD) to help them answer the questions that are most pertinent to their venture development. While each activity adds individual value, the highest impact is felt by those who progress through the gateway and are able to benefit from the entire programme of activities.

Phase gateway

A review assessment is undertaken at the end of the Market Focus phase, during which each TD will be required to present to a panel of assessors. The criteria for assessment reflects the content of the phase of work and a review of the TDs' progress in these areas. APC expects approximately 80% of participating TDs to progress through to the next phase.

Grant funding

TDAP funding is provided on a matched funding basis. At the start of the programme, APC will work with TDs to assign an appropriate day-rate to each TD employee. Through participation in the programme, TDs are able to match the grant funding allocation with their allocation of time and resources dedicated to completing the programme objectives and any related technical development. TDs are able to attract funding towards their internal costs once the required level of match funding contribution is achieved.



TDAP Wave 5 Timeline

Applications for TDAP Wave 5 open February 2021.

If you would like to express your interest, please visit the website and complete the EOI form.

| TDAP Wave 5 Milestones | Indicative Dates |
|--------------------------------|-----------------------|
| Expressions of Interest open | February 2021 |
| Applications open | February 2021 |
| Application deadline | 14th April 2021 |
| Interviews | w/c 24th May 2021 |
| Applicants notified | w/c 31st May 2021 |
| Kick off meeting | 1st July 2021 |
| Market Focus gateway | w/c 24th January 2022 |
| Technology Validation kick-off | 1st February 2022 |
| Programme end | 30th November 2022 |

TDAP testimonials

'We're perhaps not the sort of organisation that would typically apply for funding through the APC, as we're essentially a materials developer rather than an engineering company. I'd definitely recommend the TDAP programme to others in that position, though. The APC's network of suppliers, vehicle manufacturers and potential customers is what really helps to open doors in the automotive industry.'

Haroon Ihsan, Managing Director, Alsitek

'We really were ploughing green fields, and it's something that's gone on to form the basis of the discussions that we've now had with a number of major OEMs. That's probably the single biggest benefit that we've had from the TDAP programme.'

Gunnlaugur Erlendson, CEO and founder of ENSO Tyres

'Having a good idea is only a fraction of what makes a business. The experts at the APC helped us to understand how we could build a business around that and how we could progress towards commercialisation. That was a massive opportunity in itself, while the funding allowed us to produce a proof of concept and take on our first staff. That simply wouldn't have been possible without the help from the APC.'

Marcel Fowler, founder of New Motion Labs

'The TDAP support was really useful, and not just from a technical perspective. If you have a technology that you think might be applicable in automotive, but you're unsure of its commercial value or you need to address IP issues, the APC provides invaluable guidance and a wide network of further support from experts in the business.'

Dr Jörg Feist, Managing Director, Sensor Coating Systems

'Creating a prototype part that our customers could use was a key milestone in our growth strategy. The TDAP process was hassle-free and we were very well supported throughout the project. There was a lot of help with the business plan, the technical strategy and protecting the IP. I'd certainly recommend the TDAP programme.'

Peter McCool, founder of SHAPE

'The TDAP support helped us to refine elements of our technology, but it also provided a lot of valuable input on things like intellectual property, market research and strategic planning.'

Steve Barbour, Managing Director, Composite Braiding

Our latest TDAP success stories

10 exciting small and medium-sized businesses took part in our TDAP Wave 3 and have successfully come to the end of the programme, netting some great results in terms of technology development, business growth and supply chain collaboration.

Their achievements to date are already having a positive impact on green innovation and green recovery, helping to accelerate the delivery of the next generation of low-carbon automotive technology to secure a carbon-neutral future.



BrillPower

cdo²

R53
ENGINEERING

DZP Technologies
Delivering printed electronics innovation

HIFLUX
HIFLUX

Concept EV

Silver
Power Systems

stalcom
Automotive Technologies

Reaction
Engines

immaterial

You can find out more about two of these cutting-edge projects over the next few pages.



Brill Management System (BrillMS)

A radical new battery management and control system that fundamentally improves EV batteries. The BrillMS hardware and software package increases EV battery lifetime, driving range, charge rates and safety.

To find out more about this technology contact:

Brill Power Limited
hello@brillpower.com
www.brillpower.com

Potential benefits

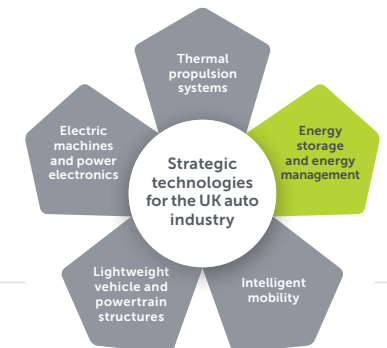
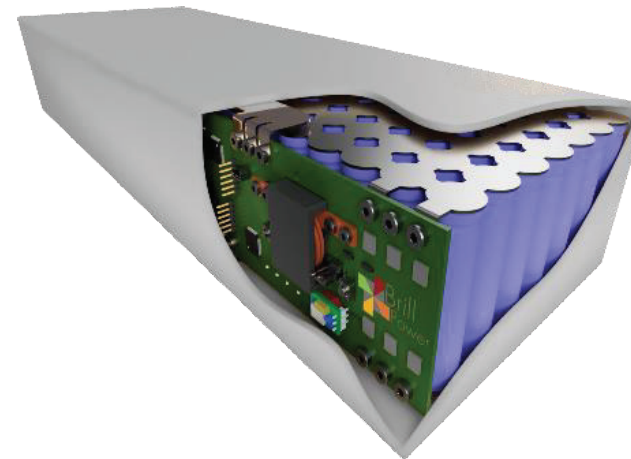
- Battery life: ~3 years longer
- Driving range: ~15% longer for aged batteries
- Charge time: ~15% faster for aged batteries
- Safety: inherently safer design
- Warranties: advanced dynamic independent warranties possible

Features

- Full current control on every series node
- Integrated dc/dc converter
- Module-level disconnect for improved safety
- Highly accurate SOC and SOH algorithms enabled by real time cell resistance measurement
- Customisable charge profiles
- Over the air software updates
- Local and remote data storage
- Built-in and customisable data analytics at cell, module, pack, and fleet level
- Chemistry agnostic; split-chemistry packs possible

Potential applications

- Electric vehicles: passenger, commercial, high-performance, off-highway, marine, and aerospace
- Stationary energy storage: from residential up to utility scale
- Future advanced chemistries



Immaterial

Immaterial makes porous materials for the storage and separation of gases. These can slash the energy requirements of traditional air conditioning, significantly reducing parasitic load, as well as store dramatically more natural gas and hydrogen at lower pressures.



To find out more about this technology contact:

Graham Spencer
g.spencer@immaterial.com
www.immaterial.com

Potential benefits

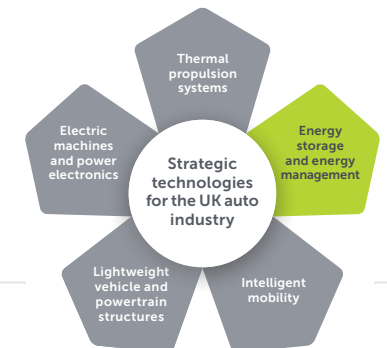
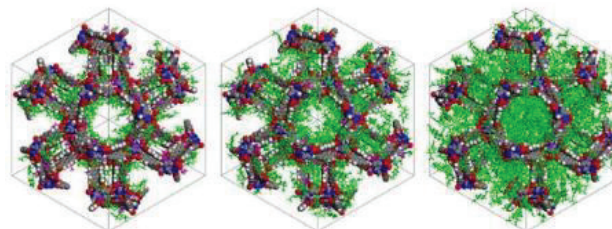
- Cabin air filtration: Air conditioning can consume half the total energy of an electric vehicle. Much of this is because new air must be constantly brought in and heated/cooled. By removing moisture, CO₂ and VOCs, and recirculating, we substantially improve vehicle range
- Lowering the storage pressure while maintaining capacity serves as a key enabler for gaseous fuels.

Features

- Microporous materials known as metal-organic frameworks (MOFs) act as molecular sponges
- IMM's 'monolithic MOFs' are produced as pellets, rather than fine powders, increasing performance and eliminating a key barrier to their adoption
- Broken global records for absorbed gas storage
- Tens of thousands of materials: a MOF can be chosen with very specific properties.

Potential applications

- Broad range of cabin air filtration applications
 - Efficient HVAC
 - Air purification (VOCs, pesticides, etc.)
- Upgrade hydrogen, including fossil fuel-derived
- Upgrade any gas storage pressure vessel (fuel or transportation)
 - New/retrofit
 - Either for increased range or for reduced pressure (or both)
- Biogas upgrading and transportation





Are you eligible for up to £135,000 of TDAP funding and business support?

- ▶ Up to £135,000 of combined grant funding and business support for SMEs
- ▶ Accelerate the development of your innovative automotive technology
- ▶ Engage with the automotive industry

Funding and support to grow your business

The Technology Developer Accelerator Programme (TDAP) helps SMEs to develop innovative automotive technologies. If you have a product or technology with the potential to reduce the environmental impact of the transport sector, you could be eligible for up to £135,000 of combined grant funding, technical support and business mentoring.

Engage with the automotive industry

Our team of specialists have years of experience in the automotive industry and can help your SME connect with key industry players.

Sign up for our next TDAP Wave

Our next wave of TDAP support is now open. If you would like to express your interest, please visit the website and complete the EOI form. If you have any further questions, please get in touch with the TDAP team at info@apcuk.co.uk



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