



**ITES**  
Part of the **UK-India** Net Zero  
Innovation Virtual Centre

# ITES: Introducing Our Innovators

Supporting startup  
success in India

Sep 2023





“Through international programmes such as Innovating for Clean Air (IfCA), Energy Systems Catapult and its partners have provided innovative businesses like ours with the safe springboard we need to develop overseas, opening doors in India to help us collaborate and commercialise across borders. We have now committed with our integrated green energy solution to help develop a fast EV charging infrastructure in India.

“We’re delighted that our innovative solution will not only make an environmental impact to help decarbonise the transport sector, but – with our locally-procured system components – we are also supporting the development of a sustainable socio-economic ecosystem in India.”

**UK innovator, Jyoti Roy, GreenEnco**



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## The start of something special

### It's an exciting and critical moment for innovators in the Net Zero transport and energy space.

Transport is one of the toughest challenges on the road to Net Zero; it's the fastest growing source of emissions, accounting for over 20% of global greenhouse gas emissions, second only to the power sector. Decarbonising transport, and the energy system powering it, demands serious ambition – but it also demands ideas, action, and collaboration. The impressive innovators that make up our first SME intake are not just participants, but pioneers in driving impactful change.

In July 2023, the Innovating for Transport and Energy Systems (ITES) initiative was visited by UK Science Minister George Freeman as a flagship UK-India programme representing a landmark moment for research and innovation between the two countries. Led by the UK's energy innovation experts Energy Systems Catapult, and the renowned Indian Institute of Science, ITES brings together the capabilities, tools and experience that allows it to work across private and public sectors to originate ideas, develop and validate innovations, and replicate outcomes to scale for market and Net Zero success.

Handpicked for their high-potential, our first ITES innovators represent the diverse spectrum of UK innovation – from rising star startups to more experienced enterprises with UK-proven products and technologies.

By supporting these innovators to test, fund and grow in India, we aim to bring forth the brightest and best, turning UK-India innovations into world-first solutions.

Key to this is the close partnership we foster between industry and innovative businesses to take ideas and technologies further, faster – from prototype to marketplace. With its origins in the award-winning UK-India 'Innovating for Clean Air' initiative, ITES continues a rich reputation for cutting-edge pilots, real-world testbeds, and research programmes between Indian industry, academia, and innovators. Together with our pilot partners, ITES will trial new technologies in India on a bigger scale than before, exploring pathways for sustainable and clean transport – such as electric and hydrogen solutions – that are reliable, affordable and adoptable, as well as ensuring an infrastructure and energy generation system that can meet demand.

At the heart of turning this ambition into action are the innovative startups and businesses we introduce to you here. Powered by tailored incubation, acceleration support, and unique collaboration, we look forward to supporting the start-up success stories that will shape the future transport and energy landscape: in India, the UK, and beyond.

**Andrew Stokes**  
ITES - UK Lead



UK Science Minister George Freeman MP meets with ITES leads Professor Ashish Verma (C) and Andrew Stokes (R)

## About Innovating for Transport and Energy Systems (ITES)

ITES is the flagship UK-India initiative driving transport decarbonisation, developing greener, quicker and more affordable ways for people and goods to move around. Part of the UK-India Net Zero Innovation Virtual Centre, and forged from a landmark Memorandum of Understanding (MoU) between UK and Indian governments, ITES brings together the best innovation and research from both countries to test, fund and fast-track solutions to market that target transport's toughest Net Zero challenges, such as an electric vehicle-ready infrastructure.

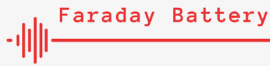
ITES offers a 'soft-landing' for UK innovators interested in the Indian market, as well as opportunities for startups in India. The collaboration will help innovative businesses tackle scalability with go-to-market support and access to potential clients, funders, and investment.

Funded by Innovate UK and the UK Department for Science, Innovation and Technology, and backed by a powerful network of industry, innovators, investors, academia and government, ITES is market led, adopting a unique perspective across the whole transport and energy system that considers the multiple and highest priority solutions needed to deliver cleaner roads, railways, seas and cities. By combining international resources, ITES will make it quicker, easier and more cost effective for the UK and India to pioneer the solutions that Net Zero needs.

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## Battery recycling and management systems



[Faraday Battery Limited](#) is a young SME setup to manufacture battery-packs up to 1 MW scale for electric vehicles including tractors, vans, buses, and trucks. Faraday Battery has developed Battery Control Unit (BCU); it substantially increases the battery life, and it doubles the battery life in large electric commercial vehicles like buses and trucks. As battery cost is almost 50% of cost of a large commercial vehicle, it significantly reduces the lifecycle cost of the electric bus/truck.

Faraday Battery's BCU comes with hardware and software designed for ISO26262 - ASIL-D safety standards and is the most advanced battery control unit for electric vehicles including trucks/buses.

Faraday Battery has been granted six patents for its battery technology.



**Nexmu**

Nexmu Ltd is an early-stage startup micro company in the UK. Nexmu's primary focus is on Electric Mobility (EV and other mobility applications) and Energy Storage (Li-ion battery enabled). Along with the team's own efforts, Nexmu has formed strong partnerships with a few academic institutions. The team has integrated its BMS and related capabilities in the electric powertrain into a single cloud-based platform.

With smart data analytics, intelligence and superior data concurrency, Nexmu gets a deep insight to optimise the performance of the entire powertrain. Nexmu is at a TRL 7-8 level and currently running pilots of this product with customers. The team is also investigating advanced electrodes for the next generation batteries with single-walled carbon nanotubes (SWCNT) for higher energy densities, operating life and safety. Nexmu is in the R&D phase for this work and at a TRL 3-4 level.



## Charging systems



[char.gy](#) is a UK manufacturer and charge point operator. In the UK, char.gy funds, installs, operates, and maintains EV charge points for private landlords and local authorities for their residents who do not have off-street parking. char.gy is building out the future network for charging infrastructure.



[Entrust Microgrid](#) specialises in smart microgrid systems that maximise user benefits from embedded solar PV, energy storage system, EV charger and other smart energy appliances, and provide the grid with great flexibility. Entrust Smart Microgrid is a smart hybrid utility-voltage DC- and AC-networked local power system with renewable energy (such as solar PV and wind power, heat pump, etc.) and energy storage (such as battery, heat and cooling storage) and other smart energy appliances and devices, for the built environment, from domestic homes to large buildings and communities. Entrust Smart Microgrid enables high penetration of renewable (solar PV and wind) energy at high power efficiency and low grid connection costs, minimises user's energy bills and supports the grid through smart microgrid control and intelligent energy management system.



Founded in 2014, [Petalite](#) is a second-generation EV charging company and solves the challenges impeding the roll-out of EV charging infrastructure. Early in the rapid charging industry's development, Petalite foresaw the issues with first generation charger manufacturers, whose primary focus was sales volumes rather than addressing the technology itself. Predicting this early, Petalite was established to overcome the industry's recurrent problems in charger reliability, lifetime and return on investment.

Through several years of R&D, Petalite innovated a revolutionary rapid charging technology called SDC, designed only for EVs, which addresses the problems continually experienced. SDC is highly scalable and patented across all major jurisdictions. To date, Petalite has won seven UK government innovation grants, which have helped fund the business and continue to develop, test, and refine SDC. Petalite is now in the process of finalising its game-changing charging solution and will bring SDC technology to the market in 2024.



## Charging systems

**[ui!]uk**  
urban integrated ltd

[\[ui!\]uk](#) is globally active and advises local authorities, cities and metropolitan regions in their strategic planning to implement ambitious climate targets, more sustainable mobility concepts and new energy strategies in urban areas. Local Authorities, private companies, Charge Point Operators as well as energy suppliers are [ui!]uk's customers and partners for the implementation and operation of Smart City infrastructures and eMobility solutions such as Charge Point Management Systems and Mobility Service Provider apps. Founded with the charter to closely accompany the European Innovation Partnership 'Smart Cities and Communities', the [ui!] Group supports cities from the UK, Germany, other European countries, the USA and Australia in their efforts to use innovative approaches and solutions to implement ambitious climate protection goals. [ui!] uk believes that climate protection, citizen benefits and economically successful innovative services and solutions are not mutually exclusive, but complement each other to form a sustainable alliance for the future of urban space.



[Vertical Solar](#) wants to enhance the rate of progress toward Net Zero via innovative applications of technology that are available and ready for use now. The team has developed unique IP comprising a number of embodiments of vertical solar enclosures with numerous applications and benefits in both performance and deployability vs traditional architectures. Vertical Solar is passionate about clean transport, circular production, additive manufacturing, micro mobility and hybrid grid and wants to bring to market new offerings that remove the traditional constraints associated with solar deployments today.

**VOLTEMPO<sup>®</sup>**

[Voltempo](#) changes the way the world travels, developing ultra-high power EV charging hubs for heavy vehicle fleets and public service stations. In the UK, the company is focusing predominantly on the fleet market and is leading a trial to roll out heavy goods vehicle charging hubs and support fleets with the adoption of electric HGVs.

The company is looking for potential partners in India to collaborate on EV charging developments and to assist in expanding our market reach into southern Asia.





## Energy storage and delivery



[Energinering LTD](#) is a trusted consultancy in the realm of industrial energy efficiency and project development. The last five years have seen the team concentrate on developing innovative energy storage solutions, most notably, its patented MECHAPRES system. This unique system uses a combination of reversible heat pumping and Composite Phase Change Material, latent thermal storage to support the needs of decentralised microgrids and DC EV Charging stations. Receiving recognition from the IUK Fast Start grant, Energinering LTD has been able to design a bench scale prototype, demonstrating its commitment to practical innovation.

This progress reflects the team's dedication to bring novel, ground-breaking research into the mainstream. Energinering LTD's focus remains firmly rooted in sustainability, careful attention to clients' requirements, and measured technological advancement. Energinering LTD tailors its services to individual customer needs, promising energy-efficient solutions that are cost-effective and reliable. In a rapidly evolving energy landscape, the team's goal remains consistent: to make energy efficiency more attainable and practical for everyone.

## LiNa Energy

[LiNa Energy](#) is leading the development and commercialisation of low-cost, solid-state sodium batteries that are a safer, more sustainable alternative to lithium-ion. LiNa's target markets are renewable energy-storage markets, where its batteries will help the global energy sector achieve the transition to Net Zero. LiNa was spun out from Lancaster University in 2017; the workforce, laboratories and battery production facilities are located in Lancaster [north west England]. The company currently has 29 staff, which will grow when expanded production facilities are completed in the year ahead.

LiNa's innovation is based on a novel sodium-metal-chloride planar cell, which unlocks the high power/energy density potential of established sodium battery chemistry, whilst delivering many additional product advantages compared to Li-ion, such as vastly improved safety, and reduced product complexity.

LiNa's leadership team has strong entrepreneurial expertise, a proven track record of success in the clean-energy space, and has successfully led large-scale collaborative research projects at home and abroad.

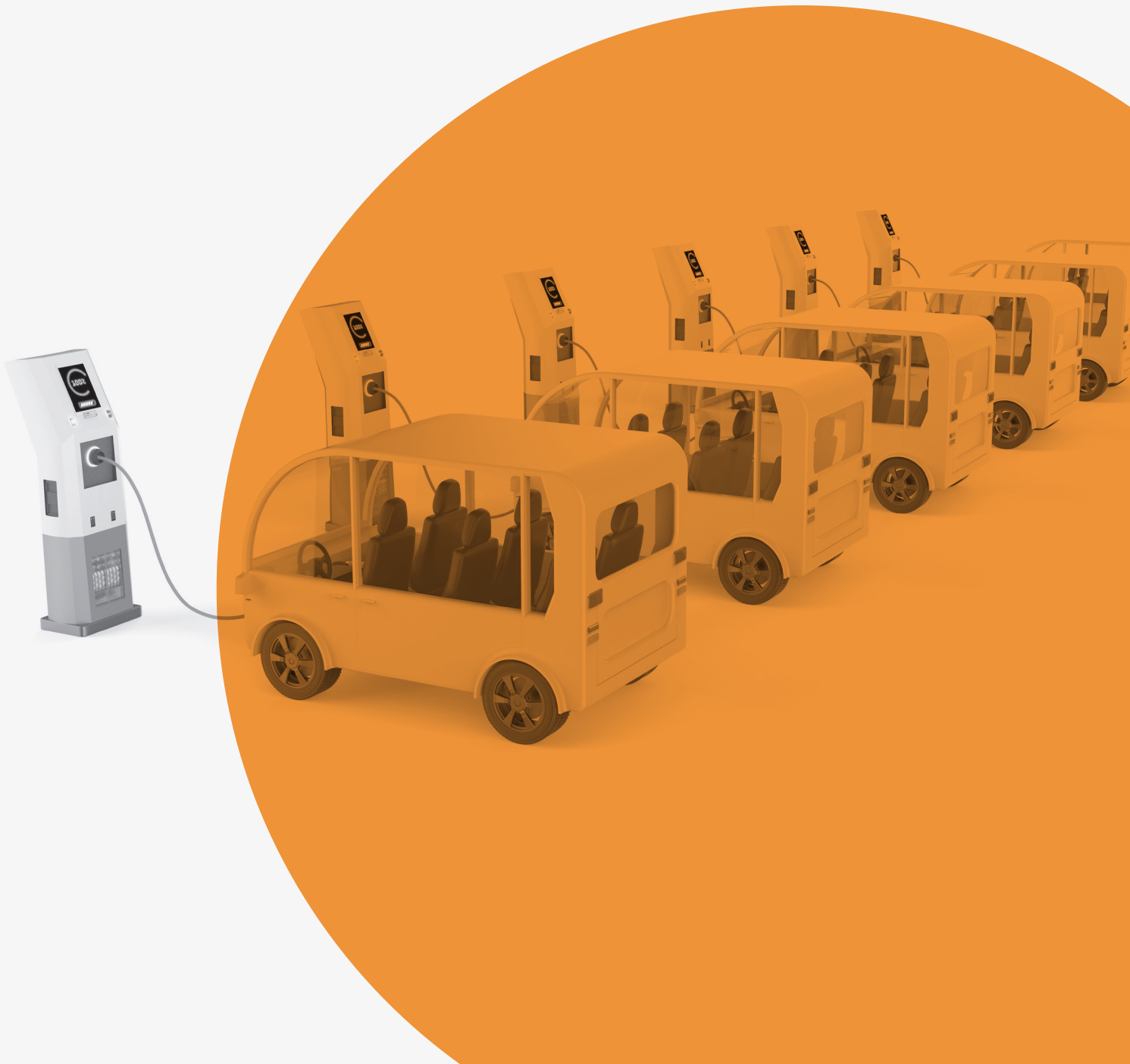


## Energy storage and delivery



[PowerUp](#) was established in 2021 with an aim to significantly reduce global greenhouse gas emissions.

PowerUp has an innovative approach to replacing fossil fuel generators with battery PowerStations, leveraging AI algorithms to predict battery behaviours and facilitate just-in-time swapping with renewable energy-charged replacements. This Energy as a Service model enables accurate supply and demand prediction for both the company's customers in utilities and construction sectors and the overall grid, empowering proactive management of battery flexibility. With the ability to export or import power as needed, the team's solution contributes to grid stability, reduces fossil fuel dependency, and fosters a sustainable energy ecosystem.



## Fleet optimisation



### Flexible Power Systems

[Flexible Power Systems](#)' products address the increased complexity, risks and cost arising from EV adoption. The FPS Operate platform provides automated EV fleet and charger management for van, bus, truck or mixed fleets that integrates data from across the business to provide a unified view of fleet operations:

- optimises schedules to minimise costs and manage range
- manages power constraints to avoid expensive grid upgrades
- monitors infrastructure health
- schedules maintenance to improve uptime
- provides resilience to infrastructure failures
- is complemented by Plan and Deploy services that de-risk the pre-deployment phase of the EV transition.



## Hydrogen



[AqSorption Ltd](#) is a company of ten years' standing with an impressive track record of building innovative renewable energy systems largely concentrating on biogas and combined heat and power plants. Following a series of enhancements to its gasification technology, AqSorption has successfully adapted to move into production of hydrogen and has already made a number of disruptive advances with its green hydrogen electrolyser.

The higher efficiencies and simplicity of operation that is the core of the reimagination of alkaline electrolysis mean considerably lower cost production and maintenance than other technologies. Given the components avoid rare-earth and are all readily available and assembled in the UK, there are few barriers to rapid upscaling and exporting the superior technology from the UK as equipment and know-how. AqSorption intends to be the go-to solution for simple, cheap, reliable hydrogen electrolysers lasting over 25 years even in harsh operating environments without performance reductions.



[Innervated Vehicle Engineering](#) (Ive) is a British company at the forefront of sustainable vehicles. As the world grapples with the challenges of climate change and seeks cleaner and more sustainable transportation solutions, Ive is driving the transition towards zero-emission vehicles. By transforming diesel vans into state-of-the-art hydrogen fuel cell vans they offer a real alternative to diesel with range and payload to match what operators need in this demanding sector.

Ive firmly believe that hydrogen fuel cell technology holds immense potential for revolutionising the commercial transportation sector. By converting, rather than building new vehicles, they are accelerating the transition to zero emissions and addressing the 37 million vans on UK and European roads today. Ive offer businesses a practical and eco-friendly alternative, helping them reduce their carbon footprint quickly while maintaining their operational efficiency.



## Hydrogen



Since 2012, JET Engineering Services has worked with and on behalf of customers to deliver solutions to technical engineering problems. The team has in-depth expertise with all aspects of engineering from conception, through to R&D and manufacture in automotive, aerospace, defence and telecommunications. Following a recent contract award to deliver a hydrogen production system on the subcontinent, and changing priorities in global markets, the company took a strategic decision to redirect its efforts into the green hydrogen sector, and has embarked on a programme to develop a range of projects and products to support this.

The company has begun research projects with specialist UK universities, in addition to working with Energy Systems Catapult and the UK's National Physical Laboratory. With a small but growing team of technical specialists, JET Engineering Services is situated at two locations on the outskirts of London, easily accessible by main transport hubs. The team is seeking partnership and collaboration opportunities for funded green hydrogen production projects (i.e. from renewable energy), partnership with potential hydrogen consumers, product development, and contract manufacturing where green hydrogen expertise exists.



[Logan Energy](#) has over 25 years' experience and a proven track record in delivering projects and solutions in the renewable hydrogen sector. Logan Energy specialises in the delivery of integrated engineering solutions incorporating hydrogen technologies for production through to refuelling. The team offers a full turnkey service, from project inception & feasibility, design development, manufacturing, installation, and operation and maintenance. Logan Energy has designed, built, and installed hydrogen production and refuelling stations, and are currently constructing further stations for buses, vans, passenger vehicles, and heavy-duty vehicles.

Logan Energy is manufacturer-independent and able to analyse and select any appropriate equipment based on our real-world solutions. Logan Energy has a growing team of qualified engineers and experienced commercial professionals who are used to delivering optimally-sized hydrogen systems to maximise future return on investment. The team can rely on a trusted network of suppliers of proven equipment, which allows it to design, procure, and offer reliable integrated systems.



## Intelligent electricity system services



[Flock Energy](#) is a smart energy startup that leverages machine learning to transform energy usage in factories and helps them digitalise their operations. Taking a novel approach to tackling energy waste and unlocking inflexibility, Flock Energy's proprietary machine learning algorithms optimise energy consumption, improving efficiency and productivity, saving cost, and unlocking new revenue opportunities for their customers, while reducing emissions. With a team of experts in engineering, product marketing, energy, and data science, Flock Energy is ideally positioned to drive sustainable transformation across manufacturing, as well as other energy-intensive sectors.



[Terranow](#) is driven by climate change mitigation and is on a mission to unlock absolute efficiency in the generation and use of energy. This will require focused solutions for forecasting, control and coordination that utilise data science and artificial intelligence. But this is still hard and expensive to do. Terranow is bridging the gap between energy data and actionable intelligence by harnessing the potential of generative AI.



## Rail



[Riding Sunbeams](#) is a world-leading innovator on a corporate mission to decarbonise rail traction networks through the development and connection of unsubsidised, direct-wire renewable energy supply, with major social impact for line-side communities.

The company was the first to achieve this globally in 2019 through its pioneering First Light project (funded by the Department for Transport) to connect solar energy directly into Direct-Current (DC), third rail-powered railways, in conjunction with Network Rail at its Aldershot site. Riding Sunbeams is now working to develop and demonstrate the required technology to connect solar power and line-side energy storage to feed the Alternating-Current (AC), overhead line railways that make up most of the world's electrified rail networks.

Riding Sunbeams' commercial model uses external finance and a Power Purchase Agreement (PPA) to minimise or eliminate capital outlay for rail operators, supplying green energy to power trains at a substantial discount relative to energy purchased from the comparatively carbon-heavy grid.



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# ITES

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