Results of Competition: Northern Angel Hub Regional Angel Investment Accelerator Pilot: Round 4

Competition Code: 1911_RAIA_RD4_N

Total available funding is £337,104

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
EVINCE TECHNOLOGY LIMITED	Evince Diamond Cold Cathode	£299,979	£149,990

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Small-Satellites (small-sats) are driving a revolution in the space industry that will see thousands more satellites launched in the next 5 years than have been launched in the previous 50\. The industry is characterised by agile fast turnaround satellite manufactucturing start-ups relying on modular hardware to minimise design and speed time to launch from \>5 years to <2 years. It is estimated that by 2026 the small-sat hardware industry will be worth \>£15.6bn in turn enabling a downstream industry worth 10x that, driven by a vision of a truly globally accessible internet and sustainability of finite resources. Nearly all small-sats are launched using shared rockets and require booster thrusters to position them into their final orbits. Ion thrusters have been shown to be 2x more efficient than chemical thrusters however they have a reliability problem. The propellant ion thrusters expel is positively charged and needs to be neutralised by firing a beam of electrons to compensate and balance the charge lost. Without the neutraliser the satellite would charge up and cease operating. The neutraliser is the weakest component on an ion thruster. Current options are based on hot filament or micro-hollow cathodes, both of which are fragile and energy/fuel intensive. We have a solution that fully overcomes these limitations by embedding the electron source completely within a synthetic-diamond substrate, thereby completely encapsulating it in one of the most thermally and chemically stable matrials known to humankind. It is able operate at ambient temperatures, switches-on instantly and offers 10x better performance over the incumbent technology. This project will focus on demonstrating a prototype neutraliser for small-sat applications. The far more rapid adoption cycle used by the small-sat community opens up the opportunities for accelerated adoption in larger satellite applications as well. We also expect our technology to stimulate innovation that leading to the design of even more efficient ion thrusters.

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results