

Innovate UK

Results of Competition: ICURe Follow On Funding Round 4

Competition Code: 1901_FS_CRD_CO_ICURE_R4

Total available funding is £540,000

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
Texture Jet	Surface Texture Adjustment Technology (STAT)	£234,518	£164,163

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

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Project description - provided by applicants

Selectively changing the surface texture on large or complex components is an essential but cost intensive activity. The innovation underpinning this project developed at the University of Nottingham will enable surface modifications to be carried out in-situ, drastically reducing processing costs and enabling innovative process solutions providing the UK with a market leading capability. Through the Innovation to Commercialisation of University Research (ICURe) program aimed at enabling the transfer of technologies developed within universities into a commercial entity, over 150 meetings were held with companies relating to the application of surface textures in industry. Extensive opportunities were identified across both aerospace and automotive industries for the application of surface textures to enhance product performance and achieve greater process chain efficiencies.

Surface texture adjustment technology (STAT) is a novel surface processing technology created by Texture Jet Ltd. a spin-out company from the University of Nottingham. STAT is a new tooling system able to redefine the surface texture of a component simply, cleanly, without masking or surface damage, on site and in-situ, enabling the ideal solution for surface preparation. STAT is attractive as a replacement technology where reductions in factory footprint, non-value-add operations, operational costs and toxic footprint are sought. Also, as an enabling technology allowing surface modification in-situ. This project will allow rapid development of lab proven research to a commercial product creating a new revenue stream and generate export and employment opportunities within the UK manufacturing sector.

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Zayndu Ltd	Chemical-free and vacuum-free plasma technology for agricultural seed treatments	£293,200	£205,240

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Project description - provided by applicants

Global food demand is set to grow by 43% in the next 30 years (UN Food & Agricultural Organisation); and yet agricultural land per head of population is falling, with a 20% drop from 2004 to 2014 (World Bank). This squeeze on food production is driving intense focus on agricultural efficiency; this project develops a low-cost technology which can be part of the solution.

Seeds are naturally infected with a range of bacteria and fungi, some of which are catastrophic to the resultant harvest. A well-established route to enhancing agricultural yield is sterilising seeds before sowing - reducing the risk of diseased crops or catastrophic crop failure. This is commonly implemented with treatments involving steam, hot water, chemicals and pesticides. Such approaches can cause significant reductions in the germination rates of seeds, and many of the chemicals in use are becoming regulated -- as harmful side effects become known. Additionally, these processes dictate post-processing -- such as drying, which is costly and time consuming.

Zayndu's approach is to use non-vacuum plasma to sterilise seeds. This process is low cost and organic, offering significant benefits; eliminating toxic chemicals - and the need for post-process drying. This project scales the system into a product with industrial capacity levels. It also builds a commercial organisation capable of exploiting the products, secures first customer installations and creates the platform for investment.

Zayndu's non-vacuum plasma technology has low running costs, using only air and electricity to clean seeds and has been tested to industry standards. With no chemicals involved, it offers low-cost, environmentally-friendly seed sterilisation - helping satisfy the world's growing food demand by offering non-diseased crops with high germination rates.

The business potential is significant - the treated seed market is forecast to be worth \$91.32B in 2022, while sales of seed sterilisation equipment are projected to reach \$842M at that time (Markets & Markets, 2017).

The innovation and project are timely. Zayndu's technology can make infected seeds and low germination rates a thing of the past, while also eliminating the environmental load of the chemicals it replaces.

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EneRail	OTTER - Optimisation of Train Traction Energy Reduction	£200,000	£140,000

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Project description - provided by applicants

This project will develop software and a railway driver training program that can improve driver performance and substantially reduce energy consumption and costs for rail operators. The project builds on 12 years of research carried out at the University of Birmingham into the optimisation of train operation and energy consumption. Reducing energy consumption delivers a cost benefit to train operators and reduces the environmental impact from rail transport.

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