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Project Specification

Tender details – the opportunity

Company name	Natural Building Systems
Company address	Unit 6, Forge Business Centre, Upper Rose Lane Palgrave IP22 1AP
Description of company activity/SIC code	• 74100 – Specialised design activities • 43999 – Other specialised construction activities n.e.c. • 42390 – Other construction installation
Objective of the proposed innovation project– this MUST involve activity that results in the development of or introduction to the market of a new product or service (max 300 words)	Suitable for buildings up to 18m in height, the ADEPT system is a fully integrated prefabricated construction solution comprising a breathable thermal envelope, cladding, internal walls, internal finishes and MEP services. The system can be delivered in panelised or volumetric elements, or both, according to client requirements. Standardised, repeated elements combine with optimal material efficiency to make a system which is affordable, scalable, quick to build and suitable for awkward access or infill sites. Demountable panels and components allow partial or complete disassembly, re-use and a circular economy of parts, as well as non-destructive alterations during the lifetime of the building. There is a patent pending on the design of ADEPT, and the first prototype building is in production. This is a small 25m2 single storey building which will be erected in October 2021. This building will be instrumented to record environmental and energy performance data to support our performance claims. Following on from this, a larger demonstration building will be constructed to act as a performance test-bed and a marketing tool, showing off the full range of capabilities of the system.

	The objective of the innovation project is to develop a manufacturing process that will allow ADEPT to be introduced onto the market at the scale that is required to ensure its adoption. There are a number of enquiries in the pipeline for ADEPT buildings, with expected demand growing from 250 panels in 2021; 3500 in 2023 and 20,000 by 2026, with exponential grown anticipated thereafter.
Company's current situation – existing project team and innovation project development stage (max 400 words)	The existing project team consists of four workshop personnel, five architects and is led by: • David Nicholson (Director of Design) who works with a team of architects and architectural assistants on refining the ADEPT system and designs for ADEPT buildings • Chloe Donovan (Director of Operations) responsible for HR, Finance and Operations working with a team who operate the ADEPT manufacturing facility • Mike Lawrence (Director of Materials) responsible for the creation and development of novel bio-based and low environmental impact materials for use in the SADEPTR system and for other more general use in construction. Prototype ADEPT panels are currently manufactured at small scale, working out of two workshops that are some distance apart. This manufacturing process has grown organically and is capable of producing ADEPT panels to construct the prototype buildings needed to demonstrate their feasibility to the market. It is clearly evident that demand will exceed existing capacity in the very near future and there is an urgent need to expand to new purpose designed premises. The proposed project is to develop a manufacturing process and associated plant to enable high volume manufacturing to take place to meet anticipated demand. This manufacturing plant will become an exemplar that can be used to develop a franchise model to enable scaling of the ADEPT solution internationally.

Business need – what expertise and support is required from a Knowledge Base to reach the objective(s) above? (max 400 words)	Although each manufacturing stage is clearly understood, current capacity is for no more than 200-300 panels per annum. A new factory is envisaged with a capacity of 20,000 – 40,000 panels per annum. The support required from a Knowledge Base is for academic expertise in optimising sustainability alongside a Process Engineer who can analyse each stage of the manufacturing process and design a streamlined production flow with quality assurance checks to optimise process and material efficiency and create a cost and energy effective production line. Current processes are as follows: Digital Design Stage A digital 3D model of each project is generated by our architectural assistants using a standardised kit of parts wherever possible. Cassette production Each cassette is cut out from sheet materials using a CNC machine and then requires labelling, sanding and loading for transport. Board elements are cut using a table saw or a vertical panel saw. Initial assembly Cassette components are assembled in a jig, glued and pinned using a nail gun then stacked for storage. HempSil (patented bio-composite) filling Cassettes are placed onto drying tables and bio-composite ingredients are added to the mixer with one mix per cassette to ensure consistency. Materials are cast into cassettes with breather boards placed on top and pinned with nail gun. Panel Assembly Cassette components are combined with dowels and infill insulation layers added. Cassettes are fixed together into panel modules before cladding components and interior finishes are added. Full Assembly Panels are combined to pre-fit the building and enable MEP and finishes to be finalised before being loaded for delivery.

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	Additional processes might include the manufacture of HempSil render carriers and plasterboards.
Please list six key words that describe your potential project, i.e. ICT, engineering, biotech etc.	• Pre-fabrication • Circular Economy • Low Carbon construction • Bio-based construction • Renewable materials • Process Engineering
Required timescales (if any) for Project Start and duration, and if applicable anticipated product launch date	Project start early 2022 Project duration 6-9 months
Optional - company budget available to match fund KEEP+ grant (if known) please see 'Further details' for maximum funding amounts	Natural Building Systems Ltd have a budget of £15,000 immediately available to match fund KEEP+ grants.
Company Contact for further information	Chloe Donovan FRSA chloe@naturalbuildingsystems.com T: +44 (0)1379 308835 M: +44 (0)7735828833
Required tender response date (min 20 working days from posting of advert)	2 November 2021

Responses are sought from organisations classified as Knowledge Bases, defined under the ERDF Definition of the Knowledge Base: Higher Education, Further Education and Research Entities which are: UK Public Sector Research Establishments, Research and Development Organisations, Research and Technology Organisations.

The Company is seeking a Knowledge Base partner to work with them to develop a project which, dependent on a successful Grant Application, will be supported by the KEEP+ ERDF project using one of the two types of intervention described below. Please also see KEEP+ website – www.keepplus.co.uk

In Stage 2, if the grant application to KEEP+ is successful, the Company requires the expertise of the Knowledge Base partner, to work with them to deliver the solution i.e. the project intervention supported by the KEEP+ grant.

Criteria for Decision making	Assessment criteria are as follows • Expertise fit 50%

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	• Timing fit 25% • Suitability of proposed methodology 25%
Date for Contract Decision	Minimum of 20 working days from date of advertisement
Tender response templates	Please approach the company for the exact format of your response.

Further details for potential respondents

You are responding to a tender for an activity which is eligible for part funding by the European Regional Development Fund, specifically under the KEEP+ Programme.

The KEEP+ Programme aims to support SMEs to develop new products and services by fostering long term collaborative relationships between Knowledge Bases – Universities and research institutions – and SMEs who need expertise and support for innovation.

Please see KEEP+ website for further information www.keepplus.co.uk or contact the KEEP+ project team 0845 196 4207 julie.benabdeljelil@anglia.ac.uk or 0845 196 4985 kayleigh.parkes@anglia.ac.uk

KEEP+ provides maximum allowable grants for its specific types of intervention. Those intervention types and maximum grant levels are as follows;

- KEEP Knowledge Exchange Embed Partnership (typically 12 months' duration) - this intervention involves a graduate working on a mid- to long-term activity with the support of a specific academic staff member, the graduate is based within the beneficiary company - grant allowance 50% of eligible costs and £10,000 capital.
- KEEP Research and Innovation Collaboration (no fixed duration) this intervention involves an academic colleague working on a short- to long-term activity, they are based at the Knowledge Base but with regular face-to-face interaction with the beneficiary company - grant allowance 50% of eligible costs plus a strict maximum of £10,000 capital.

The following is a guide to the types of cost that you should expect to occur should your application be successful;

- KEEP Knowledge Exchange Embed Partnership (typically 12 months' duration) – project development, associate wage, academic wage, administrative support, training and travel (on the part of the knowledge base employees), minor equipment (please note there is a potential separate grant for major capital purchases), recruitment
- KEEP Research and Innovation Collaboration (no fixed duration) – project development, academic wage, administrative support, consumables (please note there is a potential separate grant for major capital purchases)