

Job Title: Decarbonisation, Design & Manufacturing – KTP Associate

Unit/School: Cardiff School of Art and Design

Grade: 5

HERA: CSAD 91

Core purpose of role

The Associate will be responsible for managing and supporting a collaborative Knowledge Transfer Partnership (KTP) for a fixed term of 36 months between United Welsh Group the industry partner and Cardiff Metropolitan University (UK Knowledge Base). United Welsh Group (UWG) is a Welsh based housing provider with over 6,800 homes and employs approximately 400 people.

With three objectives delivered over seven work stages the Associate will be responsible for enabling United Welsh Group's (UWG) transition to organisational net-zero carbon (NZC) by 2035, transforming existing operations, optimising current manufacturing and developing new circular innovative modular construction systems for NZC new dwellings. This will include three key objectives. Firstly, the Associate will calculate UWG's carbon emissions to determine benchmarks, to inform current ongoing and future carbon emission reductions (embodied / operational). Secondly, the Associate will optimise processes for design-for-manufacture, construction and operation of new NZC dwellings, delivering significant innovative circular materials with waste reduction: materials, time, energy, costs and carbon. Thirdly, the Associate will implement quality control assessment processes for design-for-manufacture, construction and operation of NZC new dwellings with feedback loops for performance enhancement and waste reduction.

Key responsibilities and contributions

- To take overall responsibility and report on for the delivery of the KTP project objectives. This will include writing an Associate final report and contributing to the partners final report, quantifying the benefits that have been achieved prior to the agreed end of the KTP programme.
- Use ethnographic observations and discussions with staff / stakeholders of UWG's business processes to identify quick win carbon reduction opportunities, to be implemented by UWG staff, so empowering them on UWG's decarbonisation journey.
- Calculate baseline carbon assessment (embodied and operational emissions) of United Welsh Housing Association's (UWHA), Celtic Offsite's and Celtic Horizon's combined operations.
- Evaluate implementation of Smart Manufacturing in their design for manufacture and production processes.

- Determine opportunities for optimisation of Celtic Offsite processes and products for reducing waste and maximising margins and product expansion and diversification.
- Evaluate operational energy use of production processes, including equipment and tools for all production activities, and determine carbon reduction opportunities.
- Using 2D/3D modelling design-for-manufacture refinements, thermal performance refinements to existing construction system solutions and connections in systems and for construction of new dwellings, will be undertaken.
- Using 2D/3D modelling thermal performance, refinements to existing construction system solutions will be undertaken.
- Using a range of assessment techniques in manufacturing and construction to ensure quality control of performance targets are delivered and enhanced for existing and new construction systems for floors, roofs and wall panels, and complete modular dwellings.
- Undertake Post Occupancy Evaluation (POE) of a sample of new dwellings using refined existing and new construction systems, and modular dwellings to collect data from monitoring of environmental conditions, energy usage and carbon emissions, and occupant thermal comfort and wellbeing.
- Define refinements to specification, and processes for manufacturing, and construction of the existing 2D construction systems into new dwellings, with enhancement to occupant operation manuals.
- Develop ideation, concepts, formal design, specification, and test through modelling various variables to determine prototype production for innovative new 2D panel construction systems and 3D Modular Volumetric Dwellings for rapid design to operational dwellings.
- Refine designs, specifications manufacturing, construction processes and occupant operational guides following analysis of data and findings.
- Launch UWG Decarbonisation Strategy with Pathways to Net Zero for New 2D panel construction systems and new 3D Modular Volumetric Rapid Dwellings.
- Analyse findings in each of the work stages and report on findings through various oral and written formats, including academic peer reviewed conference and journal papers. The projects findings and stakeholder engagement will be collated for evidence of impact from the research throughout the project to UWG and their stakeholders.
- To manage the Associate Support budget associated with the KTP Project.
- Convene and lead monthly technical meetings to discuss progress, targets, and resources.
- Prototype and evaluate new products and business procedures, leading to successful commercialisation.
- Any other duties that may be reasonably assigned by the Knowledge Base Supervisor/Industrial Supervisors.

Person specification

Essential qualifications / Professional memberships

- An honours bachelor's degree in Architecture, or Architectural Technology, or Architectural Engineering, or Building Engineering, or Manufacturing, or Product design or other relevant Built Environment, Design or Engineering disciplines.

Essential experience, knowledge and skills

1. Good understanding of computer aided design and/or computer aided manufacture (2D and 3D) and/or building information modelling.
2. Knowledge of net-zero-carbon design, building construction, sustainable materials, including offsite manufacturing of innovative circular timber-frame systems.
3. Ability to conduct market research of publications, and through participant surveys, analyse and report on findings with recommendations by written and verbal communication which needs to be clear, well-structured, and easy to understand.
4. Self-motivated, well organised, adaptable with strong communication and interpersonal skills, with the capability of working under own initiative, or as part of a team to meet deadlines with a drive to lead and deliver projects.
5. Ability to manage data whilst adhering to ethical guidelines around collection and use of organisational and personally identifiable data (for example GDPR).
6. Ability to analyse technical qualitative and quantitative data, and report on findings with clearly understood recommendations both in writing and verbally.
7. Ability to build strong alliances and trust with colleagues across various organisations, establishing credibility and working cooperatively with others.
8. Previous experience of working independently and in a team, to design and/or optimise building details and components, or products for optimal performance. This experience should be in the built environment, or design or engineering or manufacturing or industries or university research.
9. Strong project management skills, including the ability to manage budgets, coordinate administrative procedures, problem solve, manage competing demands, and prioritise tasks.
10. Ability and willingness to travel independently to sites across Wales and the UK on a regular basis, to locations that are not always serviceable by public transport. Some international travel is also required for dissemination and knowledge capture, as and when required.

11. Knowledge of relevant Health and Safety guidance and legislation.

Desirable

1. Good understanding of operational and embodied carbon emissions in the built environment, and the methods used for assessing, benchmarking and reducing them. Plus, skills in undertaking thermal bridge analysis, and dynamic thermal modelling to model building fabric heat loss, occupant comfort and mitigate fuel poverty and overheating.
2. Good understanding of Design for Manufacture principles, mass and batch manufacturing processes for products.
3. The ability to oversee the specification of monitoring equipment and the management of monitoring processes in mock-up of buildings during the manufacture process or in operation, to measure thermal bridging, internal and external environmental conditions, energy usage, and carbon emissions; analyse data and report on findings with recommendations.

Welsh skill requirements

Welsh is essential to our students and staff and is a key part of our provision and services. For every position at Cardiff Met, proficiency in Welsh language is either essential or desirable. You can find information about the levels by viewing our booklet: [Welsh language skills levels](#). If a skill is listed as essential in the table below, please ensure you demonstrate this in your online application form.

Language level and general descriptor	Listening	Reading	Speaking	Writing
A1 – Beginner Can understand and use familiar everyday expressions and very basic phrases in Welsh.				
A2 - Basic user Can deal with simple, straightforward information and communicate in basic Welsh.				
B1 - Intermediate user Can communicate, to a limited level, in Welsh about things that are familiar and/or work related.				
B2 - Upper intermediate user Can express myself in Welsh on a range of topics and understand most of a conversation with a native speaker.				



C1 - Fluent user Can communicate fluently in Welsh.	Desirable	Desirable	Desirable	Desirable
C2 - Master user Can communicate fluently on complex and specialist matters in Welsh.				

Disclosure & Barring Service requirements

Please select the most appropriate statement for this role:

This post does not require a DBS check.

Supporting information

The University is a dynamic organisation and changes may be required from time to time. This job description and person specification is not intended to be exhaustive.

The University is committed to the highest ethical and professional standards of conduct. Therefore, all employees are expected to have due regard for the impact of their personal behaviour and conduct on the University, students, colleagues, business stakeholders and our community. Each employee must demonstrate adherence to our Code of Professional Conduct. In addition, all employees should have particular regard for their responsibilities under Cardiff Metropolitan University's policies and procedures.