



Job Title: Multiphysics Co-Simulation Engineer (KTP Associate) Job Description & Specification

JOB DETAILS

Department:	Engineering	Salary Band:	£37,000 to £43,300 subject to experience
Hours of Work	Full Time (37.5 hrs)	Contract Type:	Fixed Term – 24 months
Responsible To:	Dr Marcelo Precoppe, Reader in Agricultural Engineering, Harper Adams University. Liam Barks, Head of Projects Promtek		
Work Location:	Promtek Limited, Fisher Street, Brindley Ford, Stoke-on-Trent, Staffordshire, ST8 7QJ		
Holiday Allowance:	23 days		

JOB PURPOSE

This post is funded through a Knowledge Transfer Partnership (KTP) between Harper Adams University and Promtek Limited. The Associate will lead the development and embedding of a multiphysics co-simulation capability within Promtek, integrating virtual controllers with physics-based models of bulk material handling equipment. The primary outcomes are a validated virtual commissioning environment and an executable prototyping workflow that Promtek can apply to current and future product development. The role bridges academic simulation expertise with industrial engineering practice, and the Associate is expected to operate with a high degree of autonomy, guided by supervisors at both the university and the company.

MAIN ACTIVITIES & RESPONSIBILITIES

The Associate will develop physics-based simulation models of Promtek's bulk material handling equipment, incorporating Discrete Element Method (DEM), rigid body dynamics, and relevant multiphysics coupling approaches. These models will be integrated with virtual programmable logic controller (PLC) environments to create a co-simulation framework suitable for virtual commissioning and executable prototyping.



The Associate will write, test, and optimise high-performance simulation and control integration code in C++ and Python. The Associate will construct and maintain 3D CAD geometry to support simulation model development, ensuring geometric fidelity between physical equipment and virtual representations.

The Associate will configure and manage 0D/1D simulation environments, such as MATLAB/Simulink or equivalent tools, to represent control logic and system-level behaviour alongside higher-fidelity physics models. The Associate will validate co-simulation outputs against physical test data and document model assumptions, limitations, and verification evidence in accordance with engineering best practice.

The Associate will work closely with Promtek's engineering and projects teams to identify priority applications for virtual commissioning, translating operational requirements into simulation specifications. The Associate will prepare technical reports, journal articles, and conference contributions as required by the KTP programme, and will present progress to both the industrial and academic supervisory teams at regular intervals.

The Associate will contribute to the transfer of knowledge and capability within Promtek, supporting the development of internal documentation, training materials, and standard operating procedures so that the co-simulation capability is sustained beyond the KTP period. The Associate will comply with all relevant health and safety, data management, and intellectual property requirements of both Harper Adams University and Promtek Limited.

PERSON SPECIFICATION

	Essential	Desirable
Qualifications	A first or upper second class honours degree in Mechanical Engineering, Electrical Engineering, Computer Science, or a closely related discipline.	A postgraduate qualification (MSc or PhD) in a relevant engineering or computational discipline. Evidence of continuing professional development in simulation, control systems, or software engineering.
Experience	Demonstrable experience developing 3D CAD models using professional software (e.g., SolidWorks, Fusion 360, NX, or equivalent). Demonstrable	Experience with physics-based simulation tools such as DEM, FEA, CFD, or multibody dynamics software. Familiarity with virtual commissioning



	<p>experience in 0D/1D simulation using MATLAB/Simulink or a comparable platform. Proven programming experience in C++ and Python. Experience working in a team-based engineering project environment.</p>	<p>workflows or hardware-in-the-loop (HIL) testing. Experience with PLC programming or industrial control systems. Experience working within an industrial or manufacturing environment.</p>
<p>Knowledge/Skills</p>	<p>Strong understanding of classical mechanics and engineering dynamics as applied to mechanical systems. Proficiency in C++ and Python programming. Competence in 3D CAD modelling and assembly, with attention to geometric accuracy and design intent. Ability to construct, configure, and interpret 0D/1D simulation models. Clear and structured technical writing skills, sufficient to produce reports, specifications, and academic outputs. Ability to manage own workload, set priorities, and meet deadlines with limited supervision.</p>	<p>Understanding of co-simulation standards and interfaces (e.g., FMI/FMU). Familiarity with version control systems (e.g., Git) and software development workflows. Knowledge of bulk material handling processes or conveying systems.</p>
<p>Personal Qualities</p>	<p>Strong verbal and written communication skills, with the ability to present technical information clearly to both engineering and non-engineering audiences. A collaborative team player who builds effective working relationships across organisational boundaries. Highly organised, with a methodical approach to planning and executing complex technical work. Persistent and patient when confronting difficult technical problems, maintaining progress under uncertainty. Proactive and self-motivated, taking initiative to identify and resolve issues without waiting for direction. Adaptable and open to learning new tools, methods, and subject areas as project needs evolve.</p>	<p>Demonstrated interest in applied engineering research and the translation of academic methods into industrial practice. Experience of working across academic and industrial environments simultaneously.</p>



Assessment Method

All applications should be completed and submitted using the Harper Adams e-Recruitment programme at <http://jobs.harper-adams.ac.uk> To be completed no later than midnight on 26 July 2026

Applicants must complete the online application form and submit a full and current CV.

Shortlisted candidates will be invited to a formal in person only interview comprising a technical presentation followed by a competency-based interview. The presentation will be assessed for technical depth, clarity of reasoning, and communication quality. The competency-based interview will assess problem-solving approach, teamwork, organisation, and motivation.