

## Job Description – Apprentice BEMs (Building Energy Management Systems)

Job title	Apprentice BEMs (Building Energy Management Systems)
Department	Estates - Maintenance Operations - Electrical Services (YEXMB)
Grade	App 1

Job purpose (a brief summary of the role)	<p>As an apprentice BEMS engineer at the University of Warwick, you will assist in the control, performance and efficiency of energy usage and comfort control in industrial/ commercial /public buildings of a diverse nature. It requires an associated understanding of these environments and the balance between cost, comfort, safety, health, and wellbeing. It includes the specialist design, installation and commissioning expertise required to undertake this control and servicing function.</p> <p>You will also identify and report any safety hazards to your manager, prioritising the safety of yourself, colleagues, and the public.</p>
Duties and responsibilities	<p><b>Apprentice Technical Duties</b></p> <p>You will support and learn the bespoke duties of a BEMS engineer which are listed below.</p> <p>Typically, a BEMS Controls Engineer will be involved initially with designing the building energy management system that controls the building services (e.g. heating, air conditioning, renewables). They may also write related software and graphics as well as installing and commissioning such systems. Another key area is connecting and integrating with other building systems to create '<b>Smart/Intelligent Buildings</b>'.</p> <p>After the building is occupied and being used, they may also be involved in servicing &amp; maintenance, fault finding if there are problems with the system and energy performance reviews.</p> <p>Within the role the following skill set will be needed to cater for the range of different BEMS (Building Energy Management Systems) types:</p> <ol style="list-style-type: none"> <li>1. Controls Hardware and Logic: Engineers will be required to select, install, configure, and update control hardware platforms. Particularly important is an understanding of controls principles such as logic, proportional and integral control and energy saving techniques for control strategy efficiency.</li> <li>2. Field Devices: Field devices are manufactured by numerous organisations but can be, categorised into Sensors, Valves, Actuators, Dampers, Variable Speed Drives, Switches, and relays. Engineers will understand the controls and performance of field device types from first principles.</li> <li>3. Networking: Standard network architectures such TCP/IP, MSTP and RS485 are the main stays of the industry so engineers will be required to design, install, maintain and fault find these types of networks along with more specialist sub-networks for integration of items like utility meters.</li> <li>4. Communication Protocols: The engineers will be trained to a prominent level in the common open standard protocols in widespread use within the BEMS industry with the most common being BACNet but including MODbus.</li> <li>5. BEMS front End: Interaction with a BEMS is typically conducted via a 'front end. This is, generically, a graphics-based software platform aimed at providing an intuitive way for the user to find their way around their system. The engineers will be required to have a knowledge of the construction of graphics, creation of user accounts, alarm management and schedule management.</li> </ol>

### **Health and Safety and Compliance**

Support in Identifying and assessing potential risks to individual tasks and formulate and/or comply with risk assessments and method statements in conjunction with manager.

Complete jobs in a variety of different settings and environments.

The role will actively participate in department hazard identification and risk assessment exercises.

Complete any statutory compliance tasks, ensuring these are correctly completed and recorded appropriately with the administration staff.

Understand and utilise record drawings including asbestos and fire drawings with the assistance of the mechanical technician.

### **Off the job training (OTJ)**

Complete a minimum of six hours OTJ training per week. Or at least 20% of the working hours. OTJ training will take place during your regular working hours and may be day release or in a block week.

Maintain a learning journal or portfolio. Capture your thoughts, reflections, and insights from each day or training session. Contribute to showing your personal growth beyond just attendance and assessments. Record dates, times, locations, and details of every training session you have. This will help you stay organised and provide accurate information when needed.

Attend practical and theory session from a chosen apprenticeship training provider. Ensure all course work is completed on time as directed by the training provider.

Keep current and new legislation within your discipline, feedback any changes which may affect you or your team.

### **Communication and Customer Service**

Proactively liaise with the BEMs manager, trades colleagues, contractors, Estates and other departmental staff throughout the University.

Communicate professionally and effectively with a diverse customer base. Understand the 9 protective characteristics and the law which prevents discrimination of these characteristics.

### **General**

Successfully complete a driving assessment to enable you to drive University vehicles to transport staff, materials, and tools around the University estate.

Ensure all works are completed to a high standard and work areas are left clean and tidy on completion.

Undertake any other duties as from time to time may be required commensurate with the grade of the post.

### Person Specification

*The Person Specification focuses on the essential and desirable knowledge, skills, experience and qualifications required to undertake the role effectively. This is measured by (a) Application Form, (b) Test/Exercise, (c) Interview, (d) Presentation.*

Essential Criterion No.	Essential Criterion Description	Measured by
E1	A desire to work towards a qualifications or experience within building fabric, mechanical or electrical services. Give technical principles of at least one area of expertise.	A & C
E2	Communicate technical information with others at all levels, including technical reports and the use of digital tools.	A,B & C
E3	Follow a methodical approach to engineering problem solving.	A,B & C
E4	Select the design solution for a given BEMs engineering application and environment using data to inform their decisions.	A,B & C
E5	Applying knowledge of energy efficiency to optimise comfort in buildings whilst minimising energy usage.	A & C
E6	Good communication/interpersonal skills with an ability to interact with a range of people.	A,B & C
E7	Keen to develop and contribute new ideas and skills.	A,B & C
E8	Ability to work as part of a team.	A,B & C
E9	Ability to learn and adapt to new skills.	A,B & C
E10	Ability to follow instructions.	A,B & C
E11	Be aware of the needs and concerns of others, especially in relation to diversity and equality.	A & C
E12	Take responsibility for working independently and completing work to the appropriate specifications and codes of practice.	A & C
E13	Take responsibility for personal development, demonstrating commitment to learning and self-improvement. Candidates to give examples, schools work, working in a team or in sports.	A & C
E14	Accepting, prioritizing, delegating, and undertaking technical and other tasks effectively. Candidates to give an example when they have prioritised a task and for what reason	A & C
E15	Level 4 Apprenticeships offered, at least 1 A-Level/equivalent out of the 2 A-Level Grade C or above/equivalent requirement is required in a Science, Technology, Engineering or Mathematics related subject.	A & C

Desirable Criterion No.	Desirable Criterion Description	<i>Measured by</i>
D1	Fabricate engineering components and assemblies using specialist manufacturing methods and hand fitting techniques.	A,B & C
D2	Perform risk management for engineering activities.	A,B & C