University of Nottingham
UK | CHINA | MALAYSIA

Role profile

Job title	Mechanical Test Engineer - Cryogenics	**Job family and level**	Technical Services 4
School/ Department	Zero Carbon Cluster, Faculty of Engineering	**Location**	Hybrid Propulsion System facility, Jubilee Campus

Purpose of role

This technical role is to support the Zero Carbon Cluster and Power Electronics Machine Control research group. The role holder will ensure timescales and deliverables are met in accordance with the University's health and safety policies.

This will involve the setup and operation of bespoke test stands including research and industrial units under test, which can include cryostats, fuel cells, thermal engines, electrical machines and powered electronic components in the Hybrid Propulsion System (HPS) facility. The role will support the Senior Manufacturing Engineer and work alongside the PEMC Electrical Technicians and Senior Hydrogen Technician.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year

1	**Bespoke cryogenic test setup and testing**
	▪ Mechanical setup of the test stands for campaigns and otherwise when required, including:
	  ▪ Piping and connection of cryogenic fluid systems to test articles.
	  ▪ Arrangement of fluid capture, ventilation and extraction systems to safely dispose of exhaust and waste cryogenic fluids.
	  ▪ Connection of non-cryogenic cooling systems and other mechanical ancillaries.
	▪ Operation, connection and control of the laboratory's cryogenic networks and equipment.
	▪ Mechanical alignment of test articles using laser or manual alignment tooling.
	▪ Installation of cryogenic systems, including cryogenic and room temperature fluid supplies, complying with relevant standards.
	▪ Supporting the Senior Hydrogen Technician in installing hydrogen systems and test articles, as required.
	▪ To program and operate bespoke test stands during testing campaigns to customer or agreed requirement, ensuring safe operation at all times and working within agreed parameters.
	▪ Use of specialised equipment in the prototype testing and monitoring of cryogenic systems and reporting findings to the Chief Engineer.
		50%

	▪ Support Senior Manufacturing, Mechanical and Electrical Engineers for the Zero Carbon Cluster.	
2	**Software and automation** ▪ Use of a variety of test stand operation packages and to help interpret outputs based on customer specification. ▪ Use of a variety of measurement and data capture platforms in the capture and interpretation of data from testing campaigns. ▪ Support automation of test processes to minimise human intervention and maximise efficiency and repeatability of delivery	20%
3	**Health & Safety** ▪ Ensure compliance with work-related legal Health and Safety regulations/standards, including risk assessments, the implementation of controls and safe working practices. ▪ Act as the cryogen laboratory 'authorised person' and manage the laboratory in accordance with FoE/UoN cryogenic policies. ▪ Carry out the calibration, maintenance and servicing schedules for test equipment and rigs associated with the facility. ▪ Maintain good housekeeping of all workshops and laboratories within the facility.	15%
4	**Specialist technical advice** ▪ To provide technical specialist advice in support of grant applications and in the contribution to research publications. ▪ Working with industrial customers, PEMC academics and researchers to assess designs and offer advice on alternative engineering solutions to achieve the campaign objectives.	10%
5	**Other** ▪ Any other duties appropriate to the role and grade of the post holder.	5%

Person specification

	Essential	Desirable
Skills	▪ Analytical and technical problem-solving skills ▪ Ability to adopt a methodical approach and prioritise work in order to meet deadlines ▪ Motivated, self-directed and independent ▪ Good oral and written communication skills to enable the identification and understanding of the 'customer' requirements ▪ Ability to adapt communication styles to communicate clearly to a variety of audiences including specialist and senior level colleagues ▪ Ability to build effective working relationships and collaborate with others both internally and externally	▪ Competent in cryogenic system installation ▪ Compressed gas installation experience ▪ Electrical engineering skills ▪ Ability to assess and organise resource effectively and keep within a defined budget
Knowledge and experience	▪ Experience and competency in mechanical systems installations, possibly gained from a mechanical apprenticeship ▪ Independent planning and execution of mechanical installations ▪ Understanding of health and safety work-related regulations, their implementation and the implications of non-compliance	▪ Previous mechanical experience gained in an industrial or research role. ▪ Knowledge & experience of working with cryogenic fluids and systems ▪ Experience of risk analysis regarding cryogenics ▪ Experience of test stand operation and setup ▪ Understanding of hydrogen systems and their safety
Qualifications, certification and training (relevant to role)	▪ Minimum HNC or equivalent, plus relevant work experience in a similar role OR ▪ Previous work experience in a mechanical engineering role.	▪ Relevant qualification in cryogenics
Statutory, legal or special requirements	▪ Eligibility to work in the UK	

Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

Valuing people	Understands that it is essential to provide a structure that people can thrive in. Knows how to communicate with people to create a healthy working environment and get the best out of people.
Taking ownership	Communicates vision clearly, providing direction and focus. Knows how to create a productive environment where people are inspired and can work cross-departmentally in partnership.
Forward thinking	Has the ambition to be a pioneer in own area, anticipating the future change, needs and challenges. Knows how to innovate within their work context and champions others to be inspired to be part of this ambition
Professional pride	Keeps up to date on latest thinking, trends and work practices. Supports team to be thought leaders; willing to challenge if obstacles get in the way.
Always inclusive	Establishes far reaching partnerships, well beyond own area across a broad range of networks. Understand role to pay due regard to the needs of the whole community.

Key relationships with others