Job Title: Mechanical Design Engineer
Reference: SPA016
Location: Warrington
Job Type: Permanent, Full-time (37.5 hours/week)
Reports To: Senior Mechanisms Engineer & Project Manager
Travel Requirements: Occasional UK and International Travel
Salary/Benefits: Competitive salary, with excellent benefits including 25 days' annual leave plus statutory holidays, additional leave purchase, up to 8% matched pension contribution, health care, life assurance and more

The Company

ESR Technology is a leading Science and Engineering services company providing independent and specialist technical consultancy, products and services to rapidly growing Space market, as well as serving the vacuum industry, Oil & Gas, Industrial and Transport markets.

We are seeking a highly motivated and technically capable Engineer to join our Mechanism Design Team, within the Space Group. The Space Group encompasses our successful spacecraft mechanism development/assembly team and the research team which runs the European Space Tribology Laboratory (ESTL) on behalf of the European Space Agency (ESA). These vacancies are within the team which operates ESTL. We need confident, capable staff who take responsibility for their work, have excellent communication skills and want to work on technically challenging projects for international clients.

The Job

This is an early to mid-career position within the Space Group, providing specialist scientific and engineering support to clients across space and terrestrial markets. The level of appointment will reflect the successful candidate's relevant experience, knowledge and technical capability.

This is much more than a traditional CAD design role. You'll have the opportunity to work across the full engineering lifecycle, combining mechanical design with engineering analysis, including FEA, and hands-on involvement in commercial and R&D space related projects.

Working closely with colleagues and clients, you'll help define project requirements and develop engineering solutions, with involvement in mechanism and test rig design, test specification, commissioning, testing, troubleshooting, analysis and reporting.

Projects support major international space and science programmes, alongside the growing commercial space and terrestrial vacuum markets. Our clients include ESA, major aerospace organisations, spacecraft and vacuum equipment developers, and research organisations. Projects are varied in both scope and duration, ranging from focused assignments lasting a few weeks or months to complex, multi-year programmes.

You will also have opportunities to contribute to the development and continuous improvement of our engineering design processes.

You will have the opportunity to develop specialist expertise in mechanism design, with a particular focus on vacuum tribology, associated testing and the structured validation of

engineering designs for space and vacuum applications. You'll also contribute to the analysis and communication of R&D activities and technical results.

Just as important is a strong, broad-based mechanical engineering background and the ability to apply technical knowledge in a practical environment. While not the primary role, you will also have opportunities to work hands-on as part of a multidisciplinary team, collaborating closely with electrical, manufacturing and test colleagues to develop, build, test and validate innovative engineering solutions.

We don't expect you to arrive with expertise in every area, but we're looking for strong engineering fundamentals, an enquiring and practical approach to problem-solving, and the ability and enthusiasm to develop the specialist knowledge required for the role.

You will be expected to plan and take ownership of your work, working within a small, collaborative team in a commercial R&D environment. This includes understanding internal and external customer requirements and working within our EN/AS9100-accredited design processes to deliver high-quality engineering outcomes.

You will apply your technical expertise as part of a multidisciplinary team, contributing to the successful delivery of projects and developing responsibility for the timely and cost-effective delivery of engineering tasks and work packages.

Based at our modern facility in Warrington, you will work across both office and laboratory environments, with opportunities to liaise directly with clients, suppliers and project partners. Occasional travel within the UK, Europe and internationally may also be required.

We recognise that candidates will bring different strengths and experience. Depending on your background, the role offers opportunities for training and development in specialist areas including space tribology and vacuum practices, alongside broader technical and interpersonal development.

Requirements

The successful candidates will need to be self-motivated, able to prioritise work and learn quickly whilst working alongside experienced colleagues. It is essential that the candidate is:

- Strong technical capability, with an enquiring mind, a creative approach to problem-solving and a willingness to learn and contribute effectively
- Knowledge of the practical design and analysis of structural and/or thermal problems and mechanisms relevant to space or aerospace applications, together with an awareness of aerospace materials
- Understanding of the principles of bearings and gears
- The ability to undertake project management responsibilities, including leading smaller projects or acting as a Work Package Manager within larger projects.
- Experience in detailed modelling and analysis, including Finite Element Analysis (FEA), using advanced CAD and configuration management software. Experience with SolidWorks and PDM is preferable
- A willingness to undertake hands-on activities in laboratory and cleanroom environments for development projects, including supervising such activities involving flight hardware and test equipment.

- Ability to assist in the development and work to dedicated processes or test procedures as required.
- The ability to manage multiple priorities effectively, providing appropriate feedback on progress, risks, issues and areas requiring support.
- Excellent communication skills (both written and verbal) -including the ability to contribute to technical analysis and the written reporting of test results
- The ability to work collaboratively as part of a team with colleagues across different areas of the business and with external parties, contributing constructively to resolving problems and identifying effective solutions
- A continuous improvement mindset, identifying, recommending and implementing more efficient and effective methods of working where appropriate

The following skills would be of benefit:

- Experience with other FEA or other detailed analysis packages for structural, thermal or mechanism related problems including dynamic simulation would be an asset (such as with NASTRAN, ESATAN, Simulink, ADAMs etc).
- Some tribological knowledge, background or experience.
- Experience with assembly/commissioning test facilities (e.g., mechanical assembly, drives and controllers, electrical instrumentation/data acquisition and/or control software preparation, calibration, and validation of data).
- Experience working with high vacuum equipment/systems.
- A good working knowledge, experience or background in ball bearings, gears or other tribological components.
- Some experience in working within either ISO9001/ISO9100 or AS/EN9100 quality management systems.

Qualifications

An HND or degree in Mechanical or Aerospace Engineering, or a related discipline.

Travel Requirement

Occasional UK and International travel.

Right to Work

Prospective candidates for this role should be aware that any offer of employment in connection with this

vacancy is conditional upon, and subject to the candidate obtaining, and at all times continuing to have, the right to live and work in the United Kingdom.

Application

If you are passionate about delivering outstanding value to our clients and our business, then this could be the

role for you. Write to us including your full CV, highlighting what you can contribute in this diverse and interesting role to: careers@esrtechnology.com

Person Specification

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Reports To: Senior Mechanisms Engineer & Project Manager

	Essential	Desirable
Qualifications		
HND or Degree in Mechanical Engineering, Aerospace Engineering, Physics or another related engineering discipline.	X	
Masters in Mechanical Engineering, Aerospace, Physics or another related engineering discipline.		X
Additional training or certification in vacuum technology or cleanroom operations.		X
Experience		
Experience in mechanical design for high precision and/or extreme environments (ideally using Solidworks)	X	
Experience performing hand calculations to solve problems related to strength, stiffness, thermo-elastic and thermal challenges	X	
Experience with FEA for structural applications, including modal and stress related analyses and/or thermal analysis including radiative and conductive heat transport simulation	X	
Experience applying GD&T principles in high precision components and assemblies	X	
Experience with dynamic modelling using software such as ADAMS or Simulink		X
Practical experience in mechanical assembly.	X	
Experience working with instrumentation, motor drives and mechanical components.		X
Experience commissioning, configuring and calibrating laboratory or test equipment.		X
Experience working within a laboratory, workshop or engineering environment.	X	
Experience operating High Vacuum (HV) or Ultra High Vacuum (UHV) systems.		X
Previous experience within the aerospace, defence or space sectors.		X
Practical experience in electronic hardware assembly, wiring and harness assembly.		X
Experience using data acquisition (DAQ) systems and/or control software.		X
Experience troubleshooting technical equipment and resolving faults.		X

Experience supporting thermal vacuum, tribology, contamination or environmental testing.		X
Experience with CAD configuration control systems such as PDM		X
Skills and Knowledge		
Good practical engineering skills with excellent attention to detail.	X	
Ability to diagnose faults and apply effective problem-solving techniques.	X	
Good understanding of the principles of mechanical assemblies including bearings and gears, instrumentation and test equipment.	X	
Good written and verbal communication skills.	X	
Ability to work independently and collaboratively within a multidisciplinary team.	X	
Good organisational skills with the ability to prioritise workloads and meet deadlines.	X	
Proactive approach with a willingness to learn new technologies.	X	
Commitment to working safely and following quality procedures.	X	
Knowledge of cleanroom operations and contamination control.		X
Knowledge of vacuum technology and vacuum system operation.		X
Knowledge of ISO 9001 and/or AS9100 Quality Management Systems.		X
Understanding of system requirement architectures for engineering of complex systems.		X
Continuous improvement mindset and an interest in developing laboratory processes.		X