

Nick Graham, CEng

Senior Mechanical Engineer



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CAREER PROFILE

Chartered Mechanical Engineer with extensive experience in the Space Industry since 2016, accredited by the IMechE in 2021. Proven track record of leading multidisciplinary teams and driving innovation across CAD/FEA design, composites, advanced manufacturing, and emerging technologies including AI, robotics, and electronics. Adept at translating complex R&D concepts into practical, high-impact products.



EXPERIENCES

Senior Mechanical Design Engineer

Sept 2022 - Present

Astroscale, Didcot

Developing satellite systems for removal of space debris and servicing of LEO satellites.

- Lead Mechanical Designer for the COSMIC mission, developing RPO and robotic arm technology.
- Designed and developed spacecraft parts and assemblies ensuring reliability and compliance.
- Produced technical drawings to BS 8888 standards, supporting manufacturing and quality assurance.
- Performed structural analysis on ground support equipment, improving safety and performance.
- Utilised 3D printing to prototype components and build test rigs for validation of subsystems.
- Presented design work and trade-offs to stakeholders, influencing key technical decisions.
- Mentored graduates and peer-reviewed team designs, strengthening capability and knowledge sharing.

Senior Mechanical & Thermal Engineer

Aug 2019 - Sept 2022

Oxford Space Systems, Didcot

Mechanical Design Lead for OSS's "Wrapped Rib" deployable antenna, now integrated into SSTL's CarbSAR mission scheduled to launch with SpaceX.

- Led mechanical design and analysis for deployable antenna structures in preparation for qualification.
- Produced and presented design & analysis reports, supporting internal and customer reviews.
- Documented test plans and procedures to ensure compliance in qualification campaigns
- Supported business development through preparation of technical proposals, winning new projects.
- Managed work packages across multiple projects, ensuring delivery to schedule and quality standards.
- Served as Technical Lead for a Sinuous Antenna project, driving innovation in RF structures.
- Utilised SW Simulation, ANSYS and FEMAP, applying advanced modelling tools to optimise designs.

Robotics Lead / Mechanical Design Engineer

July 2021 - Aug 2025

Oxford Dynamics, Didcot

Developing micro and large-scale robotic systems integrating AI technology in an innovative R&D environment.

- Led mechanical design and development of robotic platforms, combining AI with precision engineering.
- Performed CFD analysis on propeller blades to optimise acoustic performance and efficiency.
- Utilised 3D printing to prototype components, accelerating design iteration and validation.
- Procured and assembled parts, ensuring seamless integration of mechanical and electronic systems.
- Conducted test campaigns, producing detailed reports and presentations to inform stakeholders.

Senior Mechanical Engineer

Jan 2021 - July 2021

OXLABS, Didcot

Technical lead for the development of commercial engineering products.

- Designed CAD models for innovative air filtration devices, contributing to market readiness.
- Managed development and procurement, ensuring delivery within cost and schedule constraints.
- Produced marketing materials and ads, bridging technical expertise with commercial promotion.

Mechanical Design Engineer

Jan 2019 - Aug 2019

Oxford Space Systems, Didcot

- Created 3D models and 2D technical drawings in SolidWorks to support spacecraft design.
- Developed animations for presentations and marketing, improving customer engagement.
- Managed the work package for the hold-down release mechanism on the “Offset” antenna project through to Critical Design Review (CDR), contributing to SSTL’s collaboration with Space Norway on the C-Band SAR Real-Time Surveillance System.

Mechanical Design & FE Engineer

2016 – Jan 2019

TISICS, Farnborough

Developed innovative solutions for aerospace and in-orbit applications using Metal Matrix Composites (MMC).

- Designed and applied lightweight Titanium SiC composites to new space industry applications.
- Led full-lifecycle product development for R&D projects with funding exceeding €1.5 million.
- Served as project lead for multiple Innovate UK projects focused on Metal Matrix Composites.
- Delivered presentations at QRM for project partners such as ESA, UKSpace, Thales, and Rolls-Royce.
- Became proficient in SolidWorks, designing aerospace components such as pressure vessels.
- Applied FE tools to model advanced composite layups, optimising strength to weight ratios of MMCs, and performed thermal analysis for HIP (Hot Isostatic Pressing) processes of MMC.
- Operated CNC lathes, Wire EDMs, and mills, generating CAM programs to manufacture titanium parts.
- Developed and launched a modern company website, enhancing corporate visibility.
- Built a company database and server using Microsoft Azure to improve data management.



PROJECTS (Publicly listed only)

Astroscale - ELSA-M & COSMIC missions: Contributing to Active Debris Removal satellite systems, solving end-of-life disposal challenges for LEO spacecraft. Missions scheduled for launch in the coming years.

OSS - Wrapped Rib Antenna: Work Package Manager and Technical lead on multiple projects within the Wrapped Rib development team. Set to Launch in 2026 with SpaceX on the [SSTL - CarbSAR mission](#).

Oxford Dynamics - STRIDER Robot: Led mechanical design for STRIDER, a robotic system capable of operating in hazardous environments affected by biological, chemical, or nuclear threats, including radiation-exposed areas. Collaboration with MoD and Defra.

TISICS – Materials for Demanding Environments: Developed actuator rods using lightweight Metal Matrix Composites for aerospace applications, reducing launch costs. Collaboration with AMRC.

TISICS – Robotic In-Space Manufacturing & Assembly (RISMA): Demonstrated robotic manufacturing and assembly of representative space structures in a laboratory environment. Collaboration with Airbus.

TISICS – ULTRAMAT: Advanced welding of Metal Matrix Composites using power ultrasound to improve material properties at the nanoscale.



PUBLICATIONS

Self-healing of structural carbon fibres in polymer composites.

Wang, Y., Edgell, J., Graham, N., Jackson, N., Liang, H., & Pham, D. T.
Cogent Engineering 7.1 (2020): 1799909.

Modelling of carbon-fibre reinforced composites with self-healing properties using electric field-induced alignment.

Awarded SA Tobias Memorial Prize for highest scoring overall FYP (91)
Department of Mechanical Engineering, University of Birmingham, UK, 2016



EDUCATION

University of Birmingham

Master of Engineering (M.Eng.), Mechanical Engineering 2012 - 2016
Grade: 2:1