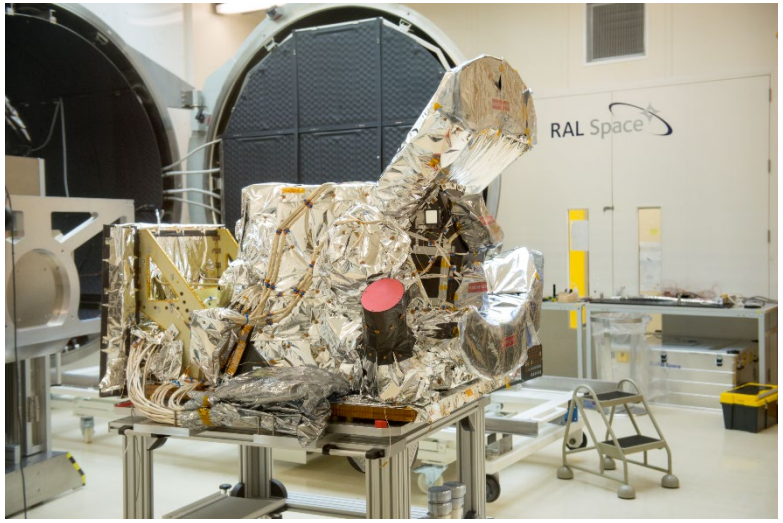
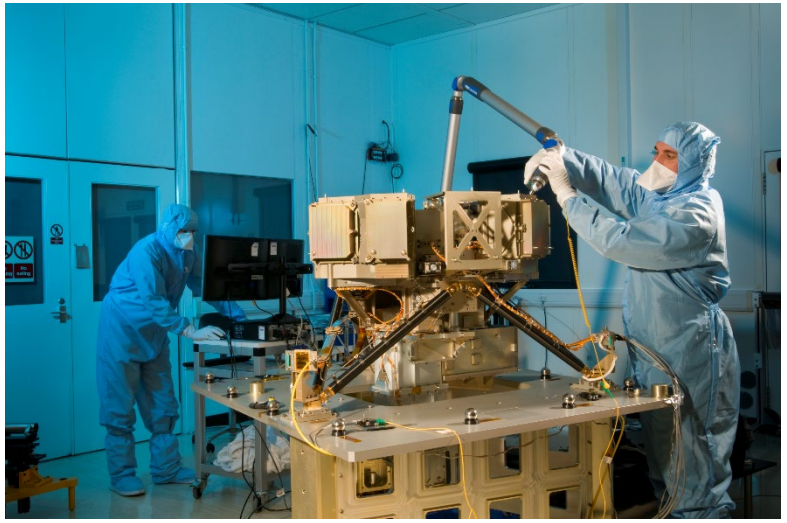
Early Careers and Skills

Dr Sarah Beardsley

Head of Space Engineering and Technology





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Why are early careers so important?

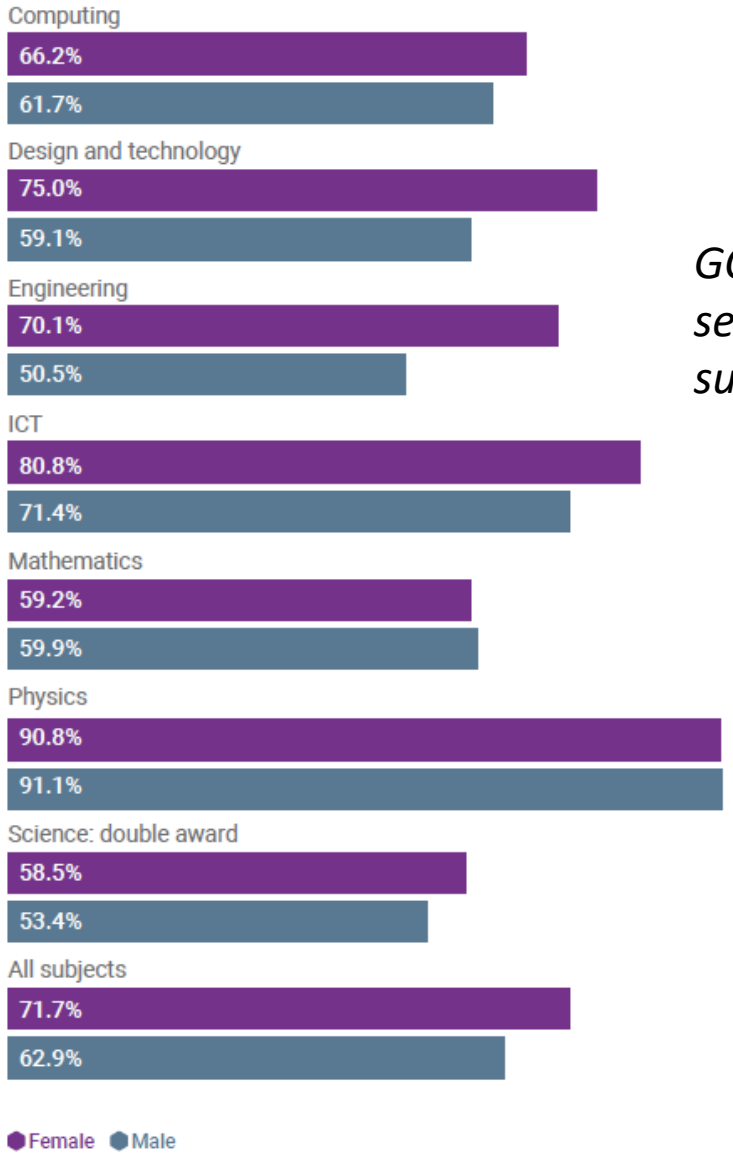
- National skills shortage
- IET[1] estimate an annual shortfall of 59,000 engineers and technicians
- STEM underpins the economy
- Vitally important for the space sector

[1] *(IET Skills and Demand in Industry 2019 Survey)*

Engaging the young

RAL Space

Secondary school



Source: JCQ. 'GCSE (Full Course) Results, Summer 2019' data, 2019.
A pass grade is considered as A* to C or 9 to 4.

GCSE pass rates for selected GCSE subjects

Engineering UK 2020

There is a widespread lack of awareness about engineering. 47% of 11 to 19 year olds said they knew little or almost nothing about what engineers do.

62%

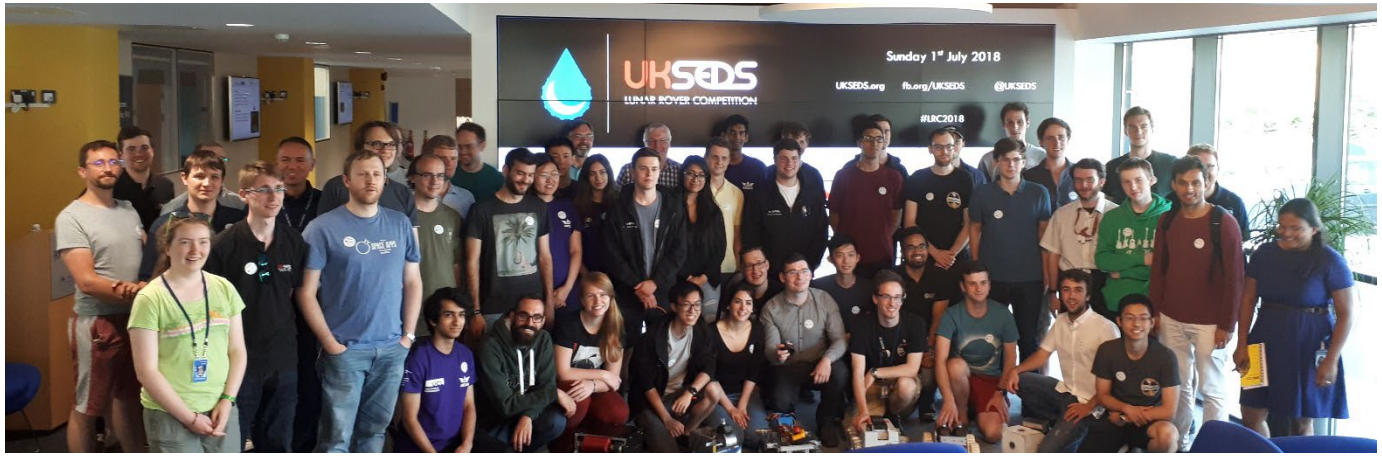
Young people often doubt their ability to succeed in STEM. 62% of 16 to 17 year olds in the UK felt that subjects like science and maths were more difficult than non-STEM subjects.

Engineering UK 2020

Technicians

Technician Commitment

Employability skills



73%

have had **problems** with candidates who **have academic knowledge**, but **not the required workplace skills**[4]

IET Skills and Demand in Industry 2019

92%

of employers feel that 'soft-skills' are equally or more important than hard skills.

Engineering UK 2020

Diversity

IET Skills and Demand in Industry 2019

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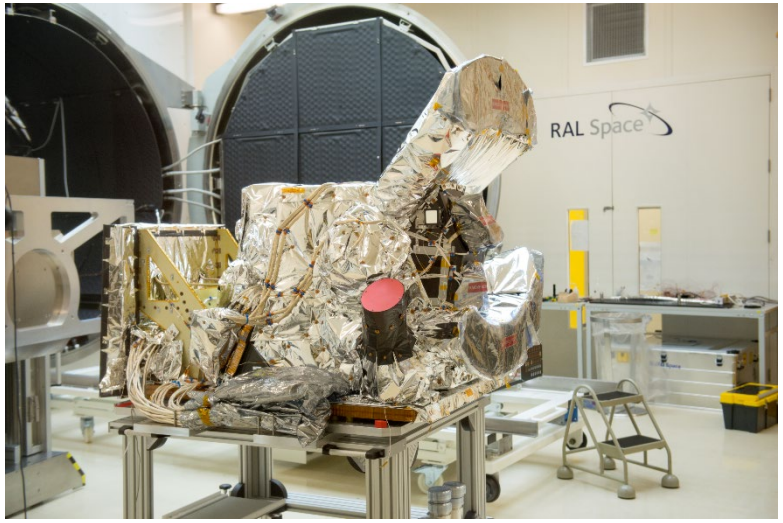
Kate Winfield

Environmental Data Scientist, CEDA, RAL Space

Graduate Project Leader



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Science and Engineering Careers Challenge

RAL Space

- **Electronic Engineer**
  - Electronic playdough
- **Mechanical Engineer**
  - Edible rover
- **Data Scientist**
  - Satellite jigsaw game

- **Software Engineering**
  - Exact instructions for making a sandwich
- **Physicist**
  - Scale of the solar system
- **Science communication**
  - Drawing a scientist or engineer

Monitoring and Evaluation

- 8226 participants
- 376 groups
- 28% of groups located in deprived areas
- 93% of participants are from Girlguiding
- Reached over 27,000 people on social media
- 97% have a better understanding
- 100% would recommend

"enjoyed thinking about careers or futures studies in science fields and this sparked discussion"

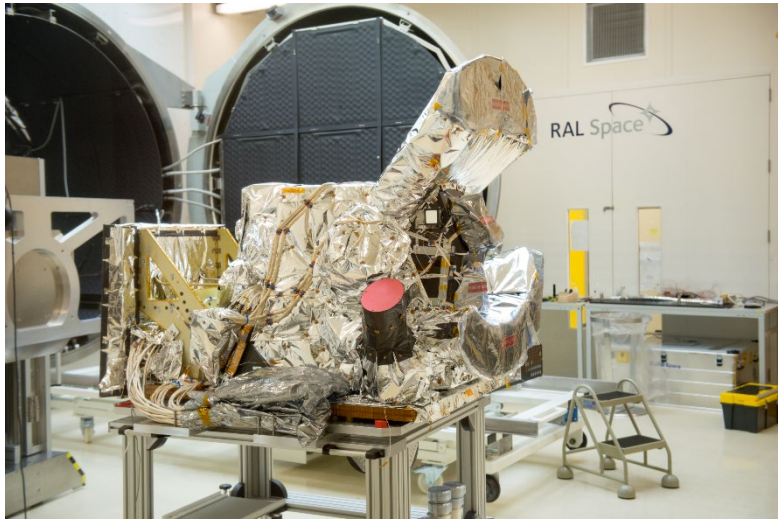
- Next steps:
  - Creating workshops
  - Reaching more groups
  - Improving the challenge
- Funders
  - STFC SPARK award
  - STFC Graduate scheme
  - RAL Space comms
  - RAL comms
- Contact
  - Project lead: Kate Winfield, kate.winfield@stfc.ac.uk
- Team members
  - Ryan Smith
  - Louise McCaul
  - Chris Parmenter
  - Paige Stevenson

https://www.ralspace.stfc.ac.uk/Pages/Science-and-Engineering-Careers-Challenge.aspx

Chris Jenkyn-Watkins

4th Year Electrical Engineering Apprentice

RAL Space 4 Month Placement



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STFC Apprenticeship

- 4 year Engineering Apprenticeship

- Specialise in either
  - Mechanical
  - Electrical
  - Electronic

- 4-month long placements
  - CLF
  - ISIS Muon Source
  - RAL Space

- College studies alongside

- Achieving a Level 3 NVQ in Advanced Manufacturing Engineering and a Level 4 HNC in Electrical Engineering

My RAL Space Placement

- 4-month Placement within the Environmental Test Team
- Work included:
  - Installation of electrical work for the large thermal vacuum chamber
  - Thermal vacuum testing
  - Assisting during vibration testing
  - Assisting with cleanroom preparations and wearing suitable PPE

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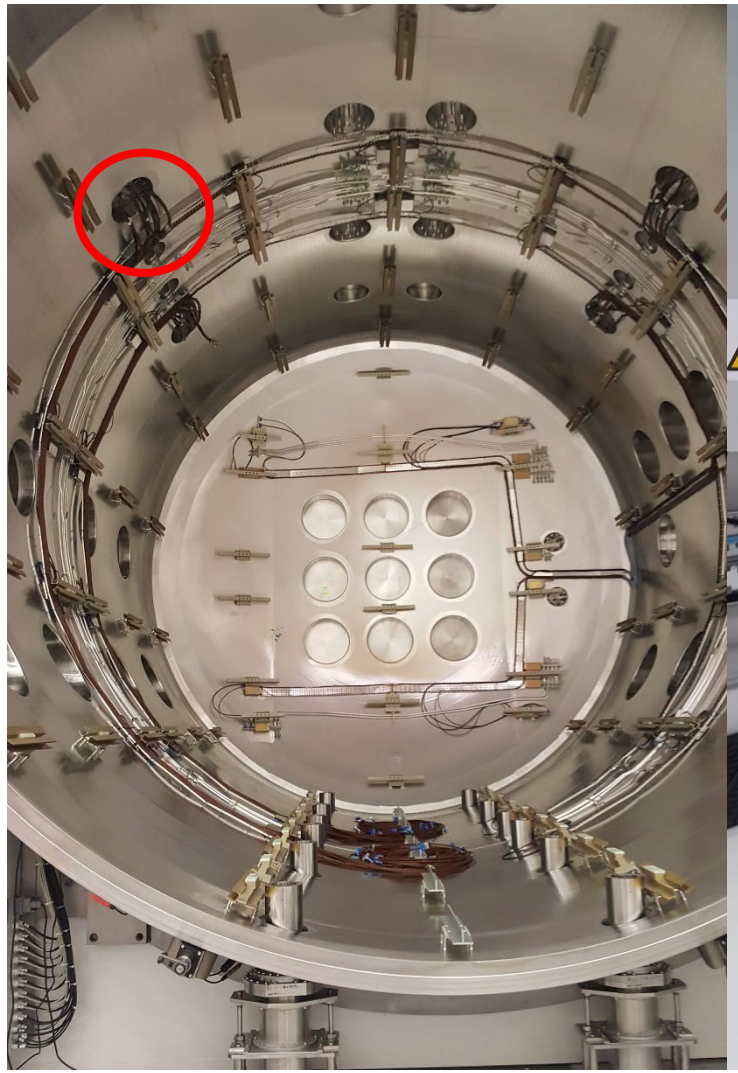
Thermocouple cable project

The project was to assist the team install thermocouple cables for both inside the TVAC and outside to the electrical panel.

Included:

- Laying and tie wrapping hundreds of cable
- Testing every cable end to end
- Terminating into special connectors



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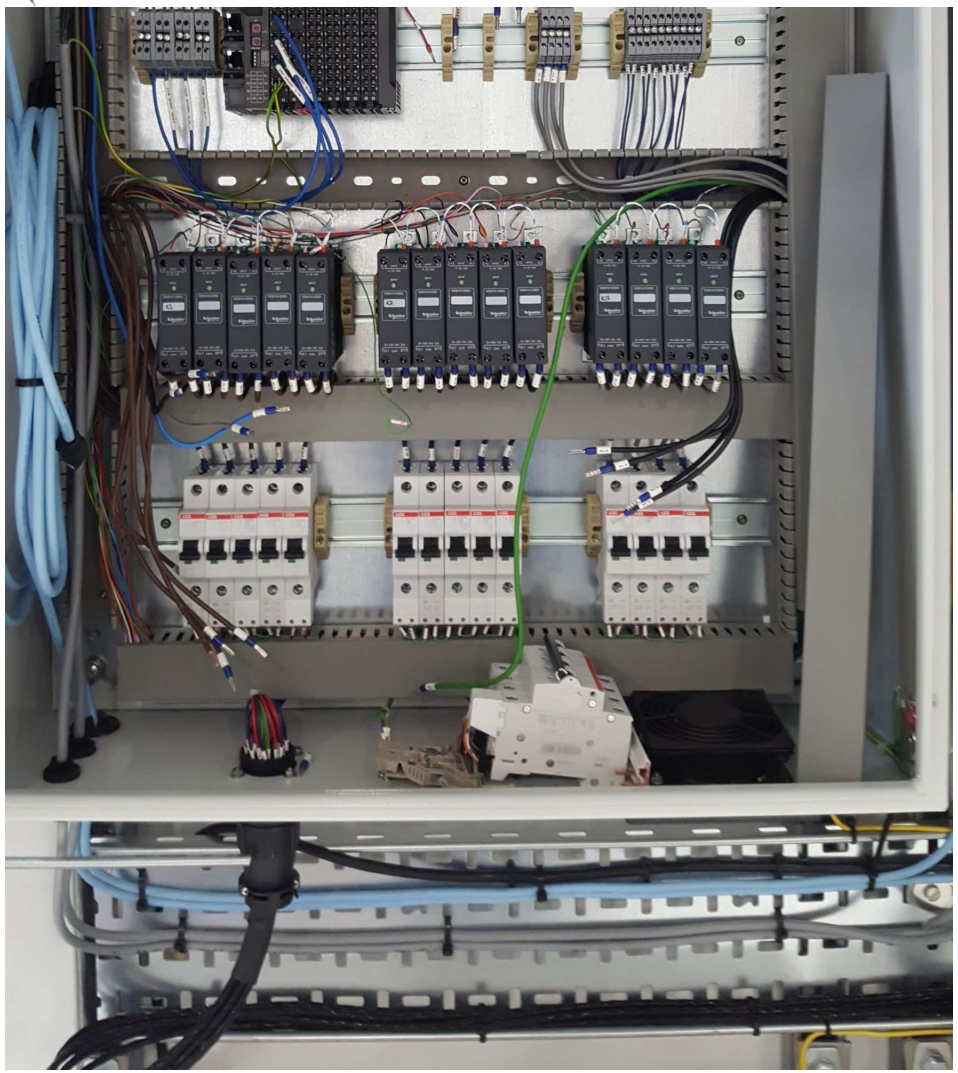
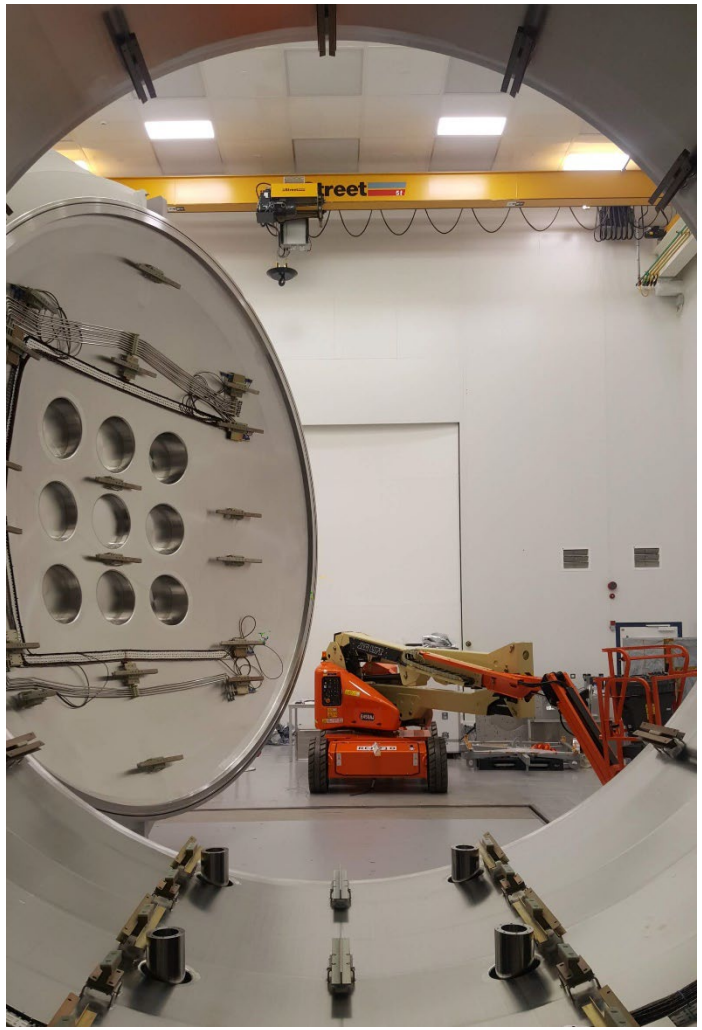


Overall Summary

- Learnt good team working and communication skills
- New techniques installing and terminating cables
- Safe and effective working within a clean room environment
- Sparked my interest in the space industry
- First time ride in a cherry picker



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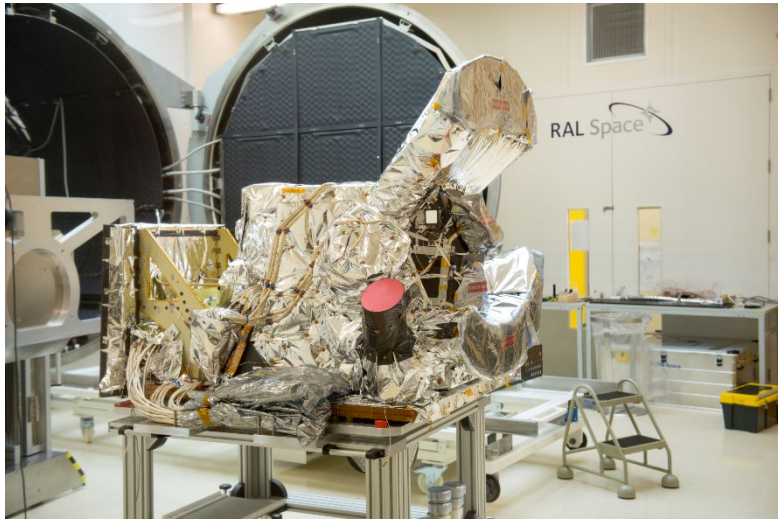
Steven George

Graduate Space Systems Engineer

HarwellRocketGroup



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Amateur rocketry

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Our vision

HARWELL ROCKET GROUP

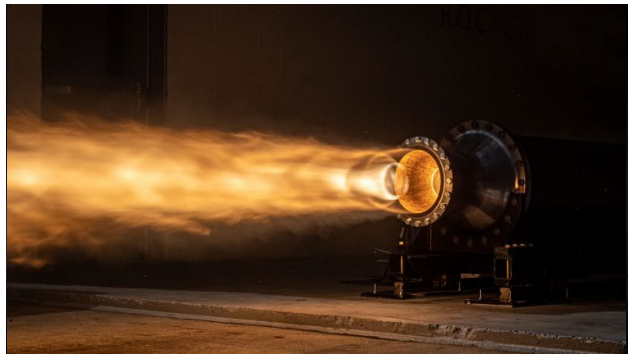
OUR VISION

To be a leading group within the UK Amateur Rocketry Community contributing to the momentum and public awareness of the growing UK launch capabilities by providing public resources in amateur rocketry, building internal capacity for designing, building and launching rocket technology, and inspiring current and incoming generations of scientists, engineers and more to pursue careers in STEM.

What we are offering

Community

Recreational

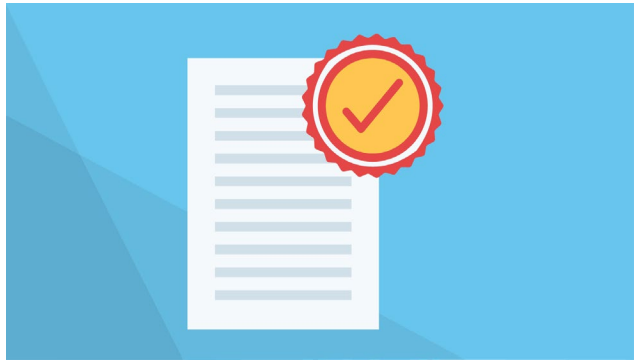


Advanced Projects

Outreach

Launch Site

Slack Channel



Certification

Volunteering

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Conclusion

Thank you for listening!


www.harwellrocketgroup.co.uk


Steven.George@stfc.ac.uk

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