

# Conference: A race against time

Energy innovation for net-zero

Thursday 25 January 2024. Aerospace Integration Research Centre (AIRC)

# Agenda

#ERA24conf

 @EnergyRA

- 9.30am Welcome and Introduction from Prof Chris Fogwill, PVC Cranfield University
- 9.50am Keynote: Rachel Fletcher, Octopus Energy
- 10.20am ERA's National Activities, Professor Martin Freer, ERA Director
- 10.40am Panel Discussion on the UK's energy challenges
- 11.30am Refreshments and Networking
- 11.50am The Regional Energy Picture: Faye McAnulla, ERA Programme Director
- 12.05pm Panel discussion on Midlands Energy Opportunities
- 1pm Lunch – Cranfield tours, poster competition, Tesla test drives
- 2.10pm Workshop sessions
- 3.10pm Feedback
- 3.30pm Closing remarks
- 3.45pm Finish

# Regional research and innovation

Faye McAnulla,  
Programme Director,  
ERA

**ERA** ENERGY  
RESEARCH  
ACCELERATOR

Conference 2024

@EnergyRA  
#ERA24conf



# Meet the team



**Professor Martin Freer**  
Director



**Faye McAnulla**  
Programme Director



**Nick King**  
Marketing and Communications



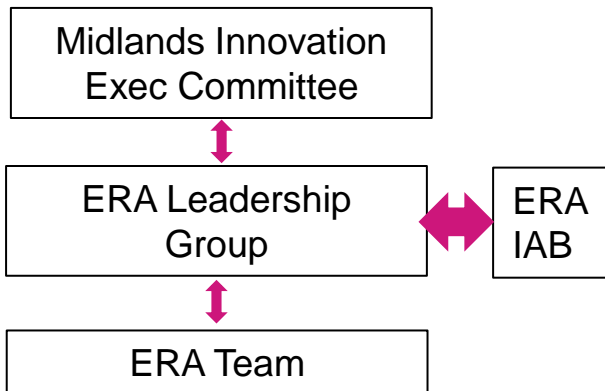
**Anu Khandelwal**  
Project and Executive Coordinator



**Lennie Foster**  
ERA Skills Manager



**Dr Kathryn North**  
Head of ERA Skills



**Suzanne Robey**  
Project Manager



**Sarah Gomes**  
Skills Officer



**Katherine Mycock**  
Business Engagement Officer

# Innovation and commercialisation



HyPER, Cranfield



LAES, Birmingham



Battolysers, Loughborough



Urban Biochar, Aston



FlexFuel Engine, Nottingham



Batteries, Warwick

# Freeport funding for Loughborough and Nottingham universities

- £5m+ pledged by East Midlands Freeport, match-funded by the University of Nottingham and Loughborough University, for the first phase of a zero carbon innovation centre
  - anticipated to complete in mid 2024
  - based primarily at Nottingham's Jubilee Campus
- Access to technology and laboratories to progress research in electrification, hydrogen propulsion systems, and advanced manufacturing – for industry use
  - attracting international investment
  - providing support for businesses of all sizes
- Construction to begin for a green hydrogen production, testing and training facility at Loughborough University Science and Enterprise Park (LUSEP)
  - installation of new battery-electrolyser

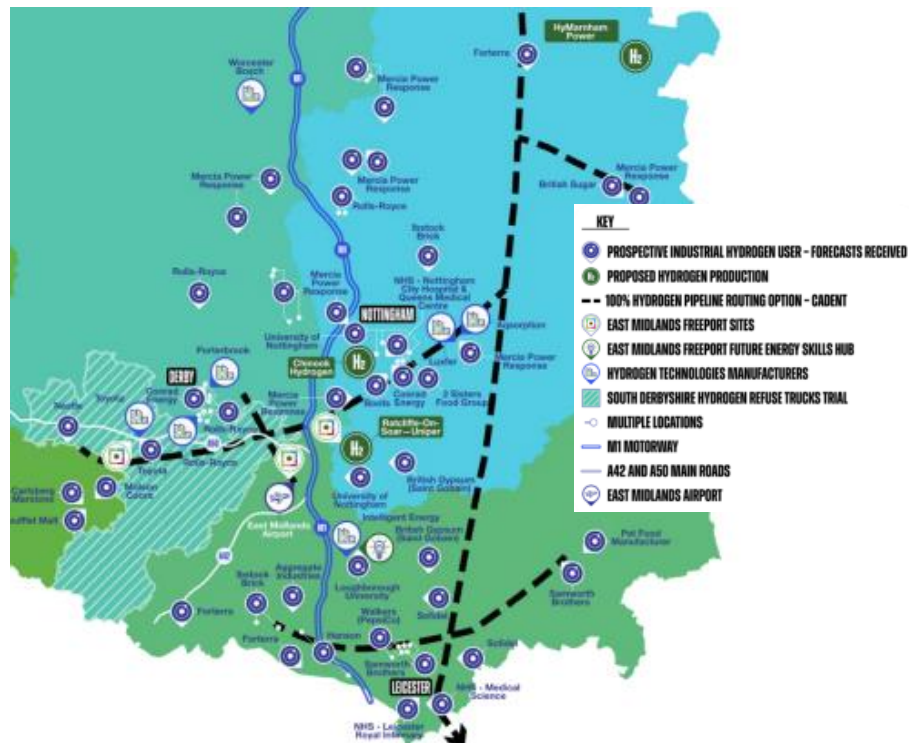


Contact: Dr Sarah Malone,  
[zerocarboncluster@nottingham.ac.uk](mailto:zerocarboncluster@nottingham.ac.uk)

# East Midlands Hydrogen

- Nottinghamshire, Derbyshire and North Leicestershire
- 44 members (including HyDEX/ERA)
- Demand exceeds 10TWh by 2040 across 70 sites (=61% of ind, comm, power gas demand).
- Potential for significant carbon abatement

Contact: Sally Brewis  
 sally.brewis@cadentgas.com



# Aston: Urban Biochar & Sustainable Materials Demonstrator

- EBRI funded by GBSLEP to deliver an Urban Biochar and Sustainable Materials Demonstrator project.
- Develop biochar for urban environments, and local economies;
- Research how biochar can be used in urban landscapes and carbon capture merits of biochar.



*Heats wood and plant material without oxygen using 'pyrolysis' process. Produces valuable byproducts including gases, oils and biochar. Prevents release of greenhouse gases and long-term capture of carbon.*

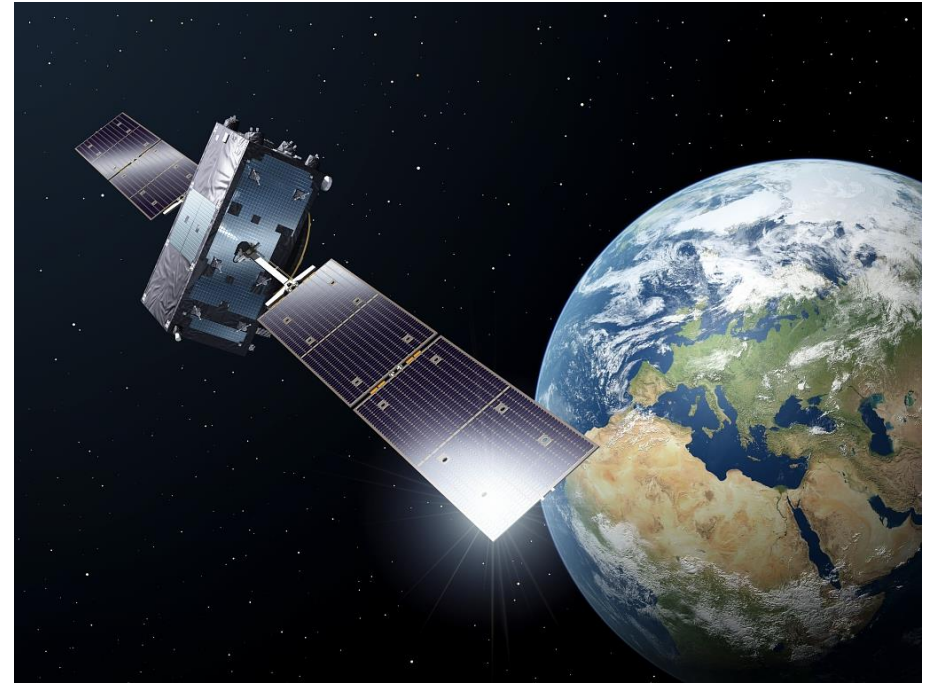


Contact: Tim Miller  
t.miller1@aston.ac.uk



# University of Leicester and Space Park Leicester, World-leading space and Earth observation cluster

- Nuclear systems can enable missions that would otherwise be impossible.
- In 2019, UoL generated usable electricity from americium, produced during the radioactive decay of used fuel from nuclear reactors and emits power for more than 400 years.
- Have now developed the first ever working prototype radioisotope thermoelectric generator (RTG) system, capable of providing 200W of heat and 50W of electrical power in space.
- Contact: [kjt7@leicester.ac.uk](mailto:kjt7@leicester.ac.uk)



# Midlands Green Innovation Network

- ERA is running a regional network for businesses.
- Provides SMEs with information and practical support & advice to maximise their potential.
- Programme of events and activities have taken place, including:
  - Funding for Green Innovation
  - Intellectual Property
  - Thinking and Working Innovatively
  - Skills for Green Innovation
  - Remodelling Your Brand for Net-Zero
  - Sustainable Product Development
  - Developing a Sustainability Action Plan

Register and more details at: [www.MGIN.co.uk](http://www.MGIN.co.uk)

Contact: [Nicholas.King@era.ac.uk](mailto:Nicholas.King@era.ac.uk)





Commercialisation and Innovation  
Supporting industry to enter and innovate in the sector

Skills and Training  
Developing training programmes  
Engaging on skills development



Demonstration  
Development of hydrogen facilities at our partner sites

International  
Developing relationships internationally to encourage knowledge exchange and investment



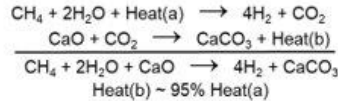
Contact: [f.e.mcanulla@bham.ac.uk](mailto:f.e.mcanulla@bham.ac.uk)

Policy

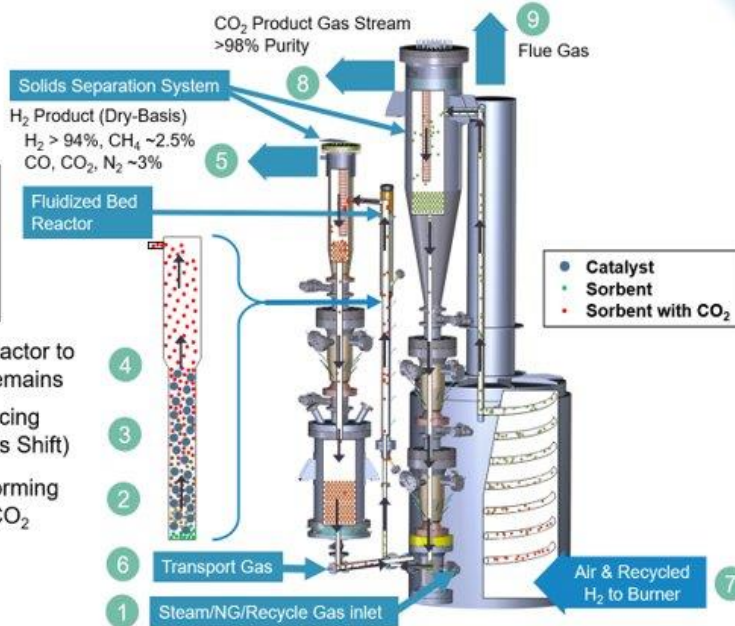
Inputting to policy development and working with policymakers



**Sorption Enhanced Reforming (SER)**



Sorbent elutriates through reactor to filter while heavier catalyst remains  
CO<sub>2</sub> absorbed by sorbent forcing more CO<sub>2</sub> to form (Water-Gas Shift)  
Steam Methane Reforming produces H<sub>2</sub>, CO & CO<sub>2</sub>



# H2GP Programme

- Launching the UK programme
- Programme for secondary school children
- Design, test and race radio controlled cars
- Programme running from Jan to July 24 with UK final and world final in the Summer
- Keen to hear from sponsors and schools



[www.era.ac.uk/projects/horizon-hydrogen-car-project/](http://www.era.ac.uk/projects/horizon-hydrogen-car-project/)

Contact: [f.e.mcanulla@bham.ac.uk](mailto:f.e.mcanulla@bham.ac.uk)



# Hydrogen Winter School 8-12 January 2024

- Five-day programme with accommodation
- Mix of academic lectures and industry guest speakers
- Visits to the hydrogen research facilities at our university partners.



Summer event EOI being taken for interested attendees.  
Contact [S.Gomes@lboro.ac.uk](mailto:S.Gomes@lboro.ac.uk)



- Flex Dual-Fuel Heavy-Duty Engine
- H<sub>2</sub>, NH<sub>3</sub> ... and more!



University of  
Nottingham  
UK | CHINA | MALAYSIA

**MAHLE**  
Powertrain



**Decarbonisation via  
Dual-Fuel Operation**

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**100% Diesel  
Operation Possible!**

# Innovation Report: Hydrogen Rail for the Midlands

- Rail Feasibility Study with Midlands Engine, Vanguard
- STS, University of Birmingham and Arup
- Stakeholder workshop - opportunities & challenges
- Report identified four priority routes
- Successful trial could unlock a larger commercial opportunity and support rail decarbonisation
- Report prepared; launch planned
  
- Contact: Suzanne Robey,  
[Suzanne.Robey@nottingham.ac.uk](mailto:Suzanne.Robey@nottingham.ac.uk)





- HyDEX Innovation Fund is currently supporting 9 SME's from across the Midlands to develop a hydrogen technology/service +1 TLR level.
- Networking events
- HyDEX off Road Network
- Hydrogen Skills in person and online (see Hydrogen skills Hub)



# Summary of benefits of engaging with us

- Collaboration opportunities to apply for research and innovation grants
- Knowledge exchange from attending conferences, networks and talks/workshops
- Involvement in our skills development programmes
- Access to ERA partner facilities for R&D and demonstration facilities
- Promotion of your initiatives through the ERA comms channels
- KTP and PhD opportunities



# Upcoming events – ERA & HyDEX

Event title	Date	Details
<b>ERA Policy Commission report launch</b>	31 Jan	Launch of the Policy Commission report on 'Assessing the case for public ownership in the energy sector' in Westminster, London
<b>Hydrogen Awards</b>	27 Feb	Opportunity for any researchers in the ERA/HyDEX network to enter the Hydrogen Awards
<b>EU-UK Hydrogen Engagement</b>	March and June 2024	Policy engagement events planned in the UK and Brussels
<b>H2 Grand Prix</b>	June 2024	We will be showcasing the programme at Hydrogen UK Conference. Finals in June



Thank you for your time

f.e.mcanulla@bham.ac.uk

[era.ac.uk](http://era.ac.uk)

@EnergyRA

Linkedin: [energyresearchaccelerator](https://www.linkedin.com/company/energyresearchaccelerator)

