

University builds country's first hydrogen powered train

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A hydrogen powered locomotive, the first of its kind to run in the UK, has been developed by the University of Birmingham as part of a competition organised by the Institution of Mechanical Engineers.

The Hydrogen Pioneer uses a hydrogen fuel cell to power its electric motors and to charge a series of car batteries. The batteries help the train meet its power requirements during acceleration, and they also store the energy generated by the braking system. The locomotive is exceptionally quiet and only emits a small quantity of pure water during operation. The locomotive uses an advanced 'metal hydride' storage cylinder which is capable of holding 5,000 litres of hydrogen at low pressure, and is similar to the arrangement on the University's hydrogen powered canal boat, the Ross Barlow.



University's hydrogen powered train in motion

Faculty advisor to the team, Dr Stuart Hillmansen, from the University's School of Electronic, Electrical and Computer Engineering, said: *'Our hydrogen powered locomotive is a clean and efficient example of how hydrogen power could work for future trains on non-electrified routes. We hope that our efforts will encourage the rail industry to take a closer look at this exciting technology.'*

The locomotive performed well during the competition, and Stephen Kent, Team Leader and Teaching Fellow from the University's Centre for Railway Research and Education, added: *'We are really pleased with the locomotive, particularly as it managed to haul 4,000kg, well over 6 times the specified load. The locomotive is helping to promote hydrogen as a viable fuel for the future, and the students involved benefitted from the experience of tackling a highly realistic engineering challenge.'*

The use of hydrogen power was made possible thanks to the generous support of the **Circles of Influence Innovation and Immediate Impact Fund** (<http://www.birmingham.ac.uk/alumni/giving/innovation.aspx>), and the support and expertise received from the School of Metallurgy and Materials. You can see the Hydrogen Pioneer in action in the following YouTube clip: <http://www.youtube.com/watch?v=3i4zIBeKYgY> (<http://www.youtube.com/watch?v=3i4zIBeKYgY>).