

Research Grants and Contracts

Funded studentships (other than DTA or University funded)

1. Effect of atmospheric turbulence on trains (1984/87) SERC/British Rail CASE.
2. Train aerodynamic drag (1985/88) SERC/British Rail CASE.
3. Aerodynamics of animal transport vehicles (1992/ 95) Silsoe Research Institute
4. Aerodynamics of large animal transport vehicles (1993/96) Silsoe Research Institute
5. Prediction of wheat lodging risk (1993/97) Home Grown Cereals Association
6. Analysis of pollution dispersion from road vehicles (1994/97) EPSRC Engineering Maths studentship
7. Measurement of pollutant dispersion in vehicle wakes (1994/97) EPSRC Clean Technology Unit Studentship
8. Development of BR wind loading code (1995/96) EPSRC MRes Studentship
9. Development of a model for predicting natural gas releases in urban areas, (1995/96) EPSRC MRes Studentship
10. Ventilation of pitched roof agricultural buildings (1996/99) Silsoe Research Institute studentship
11. Flow and dispersion in vehicle wakes (1998/2000) MIRA studentship
12. An analysis of sudden unsteady gusts and the application to tree stability (2004/2007) EU AlBan studentship
13. The use of pattern recognition and neural networks to analyse the dynamics of high rise buildings, (2004/2007) EU AlBan studentship
14. Climate change effects on the UK Railway system (2006-2009), RRUk studentship
15. Measurement of high speed train pressure transients (2010-2013) RRUk studentship

Grants from Research Councils, charities and RDAs

1. Calculation of aerodynamic forces on trains (1987-88) SERC/British Rail (£12k)
2. Aerodynamics of high-sided vehicles in cross winds (1987-90) Research Corporation Trust (£8k)
3. Damage due to tree fall in winds (1988-90) SERC (£27k)
4. Ground vehicles in cross winds (1989-92) SERC/BR/BMT/Cranfield/Queens, Belfast (£87k)
5. Tree fall in high winds (1990-92) SERC (£33k)
6. The aerodynamics of chicken transporter vehicles (1990-93) AFRC/AFRC Engineering (£82k)
7. Vehicle pollutant dispersal in urban areas (1992-95) SERC (£130k)
8. Parallel computation of flow around a bluff body (1993/96) SERC (with QMWC) (£110k - £8k to University of Nottingham)
9. The aerodynamics and ventilation of poultry transport vehicle (1993-94) AFRC (with Silsoe Research Institute) (£34k)
10. Reducing waste in pre-slaughter transportation of poultry by road (1994-96) BBSRC (with Silsoe Research Institute) (£140k)
11. Particulate pollutant dispersion in the urban environment (1995-98) EPSRC (£141k)
12. Purchase of multi channel high frequency pressure measurement system (1997-99) EPSRC (£35k)
13. Measurement of slipstreams of ground vehicles (1998) EPSRC Inland Surface
14. Transport LINK scheme (with BRR and MIRA) (£100k including industrial contribution)

15. Measurement of wind forces on road signs (with road sign manufacturers) (1998) EPSRC Inland Surface Transport LINK scheme (£55k including industrial contribution)
16. The development and validation of a model for predicting the risk of lodging in cereals (1999-2002) BBSRC (£155k)
17. Experimental quantification and modelling of dispersion of particles in urban street canyons (2000-2002) NERC (£140k) <http://badc.nerc.ac.uk/data/urgent/Projects-Doc/urcany.html>
18. Rail Research UK (2003-2006) EPSRC (£700k)
19. The construction of a thunderstorm generator (2005-06) (£15k), Royal Society
20. Rail Research UK – 2nd phase (2006-2010) EPSRC (£700k)
21. TRAIL – Technology translation for the rail industry in the midlands (2006-2009) Advantage West Midlands (£500k)
22. SWERVE (2008-2011) EPSRC (£450k - £30k to Birmingham University) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/F037422/1>
23. The flight of wind borne debris (2008-2011) EPSRC (£450k) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/F03489X/1>
24. FUTURENET – Future Resilient Transport Networks (2009-2013) EPSRC from Adaptation and Resilience to Climate Change programme (£1.5m - £600k to Birmingham University) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/G060762/1>
25. Reduction of railway energy use (2010-2011) EPSRC Member of consortium led by Southampton University (£50k to Birmingham)
26. Resilience through innovation – critical local transport and utility infrastructure. (2010-2011) EPSRC Feasibility account (£250k), <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/I016163/1>
27. The measurement of train aerodynamic phenomena in operational conditions (2011-2016) EPSRC (£550k) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/I03842X/1>
28. Train underbody flow (2011-2012) EPSRC 2010 Unspent balance University of Birmingham (£13.5k)
29. Barriers to Intermodality (2012-2013), EPSRC Bridging the Gap institutional funding (£40k)
30. iBUILD (2013-2017), EPSRC in collaboration with Newcastle and Leeds (£3.5m in total, around £1m to UOB) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/K012398/1>
31. Track Systems For High Speed Railways: Getting It Right (2014-2017) EPSRC led by University of Southampton (£205k to UOB) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/K03765X/1>
32. The safety of pedestrians, cyclists and motor vehicles in highly turbulent urban wind flows (2015-2018) EPSRC (£720k) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/M012581/1>
33. The aerodynamics of close running ground vehicles (2016-2017) EPSRC (£556k) <http://gow.epsrc.ac.uk/NGBOViewGrant.aspx?GrantRef=EP/N004213/1>
34. UK Fluids Network, EPSRC through Cambridge University (2016-2018), network funding only
35. UKCRIC, BIS/ EPSRC £1.5m for TRAIN Rig refurbishment, £28m to UOB in total
36. Increasing the resilience of cereal and oilseed rape production to weather damage

- (2017-2019) BBSRC SARIC led by Lancaster University (£685k, 150k to UOB))
37. Transport resilience to extreme weather in developing countries (2016 – 2017), EPSRC Institutional Funding, Global Challenges Research Fund (£41k)
 38. Understanding and reducing lodging in maize and rice (2017-2019), BBSRC GCRF Foundation Award, with Lancaster University and overseas partners (£600k)

EU Grants

1. Transient aerodynamics of trains (1995-98) EU (with European collaborators) (137kecu)
2. Alternative auxillary ventilation layouts for use with continuous mine systems (1997-99) EU (with European Collaborators) (80kecu of total contract of 883kecu)
3. Access to large-scale wind tunnel facility at Nantes. (2004 – 2005) EU (50 k€)
4. WEATHER; Investigation of cross wind effects on vehicles (2004-2006) EU CRAFT programme (215 k€) http://cordis.europa.eu/project/rcn/86545_en.html
5. European Railway Network of Excellence EURNEX (2005-08) EU (£200k) http://cordis.europa.eu/result/rcn/47922_en.html
6. AeroTRAIN (2009-2012) EU with 20 other partner (£350k) http://cordis.europa.eu/result/rcn/54001_en.html
7. MOWE-IT (2012-2014) EU (2.4M€ - 125k€ to University of Birmingham) http://cordis.europa.eu/result/rcn/145898_en.html
8. Living RAIL (2012-2015) EU (1.3M€ - 109k€ to UoB) http://cordis.europa.eu/result/rcn/157891_en.html
9. LIFTRAIN (2016-2018) Marie Curie Fellowship (195 k€)

Industrial Contracts

1. Analysis of Cumbrian wind measurements (1982-83) British Rail (£2k)
2. Atmospheric boundary layer simulation development (1983) British Rail (£2k)
3. Topographical exposure factor determination (1983) E.S.D.U (£1k)
4. Redheugh Bridge wind analysis (1983) T.R.R.L/Tyne and Wear (£2k)
5. Analysis of Cumbrian wind measurements (1983/84) British Rail (£1k)
6. Design of inlet gate for N.W.C. Slalom Course (1985) Notts County Council (£2k)
7. Tatter flag results analysis (1985) British Rail (£2k)
8. Review of train aerodynamic drag (1986) British Rail (£2k).
9. Wind tunnel tests of Snake Pass snow barriers (1986) Derbyshire County Council (£3k)
10. Aggregate permeability measurements (1986-89) SERC (£3k)
11. Forth Bridge wind analysis (1987) W.M. Fairhurst and Partners (£2k)
12. Concrete seal testing in simulated rain (1987) Evans Concrete (£1k)
13. Docklands Light Railway pedestrian aerodynamics (1987) Transmark (£1k)
14. Development of moving ground plane for train drag measurements (1989) Royal Society (£7k)
15. Critique of BMT Channel Tunnel Vehicle wind tunnel tests (1989) British Maritime Technology (£1k).
16. Lyme Brook capacity assessment (1989) Staffs CC (£1k)
17. Review of freight train drag (1989) British Rail (£2k)
18. Aerodynamic measurements in a glass furnace (1990) British Gas (£3k)
19. A survey of wind induced road vehicle accidents (1990) Rees Jeffreys Road Fund (£6k)

20. Aerodynamic measurements on railway containers (1991) Deutsche Bundesbahn (£5k)
21. Flow around train fronts (1992) British Rail (£4k)
22. Investigation of the leaf fall problem (1992) British Rail (£2k)
23. Drag measurements on mgr hopper wagons (1992) British Rail (£5k)
24. Assessment of wind loading on an urban tree (1994) Bristol City Council (£0.5k)
25. Assessment of wind effects of Trent crossing (1994) Notts County Council (£0.5k)
26. Investigation of roof pressure distributions on buildings (1991) Building Research Establishment (£65k)
27. Project definition study for the Civilised City concept (1991) SERC (£6k)
28. Review of the effects of street geometry on gas releases (1994) British Gas Research (£10k)
29. Measurement of the natural frequencies of urban trees (1995) Royal Society (£8k)
30. Aerodynamic measurements on a mast head assembly (1996) Abacus Municipal (£5k)
31. Trip to VTT Finland (1996) British Council (£0.5k)
32. Assessment of wind shelter effects of Ocean Plaza development at Southport (1997) West Lancashire Yacht Club (£0.5k)
33. Measurement of wind forces on Finnish railways double deck coach and assessment of vehicle safety in high winds (1997) VR Ltd (£15k)
34. Wind loading on large Buddha statue (2001) Mott MacDonald (£2k)
35. Stability of airbus wing during transportation (2002) Airbus (£5k)
36. Overturning of trains in high winds (2002-2003) Rail Safety, (£25k)
37. Pedestrian wind comfort considerations for new development in Ilford (2003) Jefferson Architects (£1k)
38. International Review of Railway Aerodynamics (2003) Railway Safety (£15k)
39. Production of RSSB RACOP on wind tunnel testing (2004) RSSB (£15k)
40. The slipstreams and wakes of trains (2005-07) RSSB (£45k)
41. Pantograph Sway studies (2007-08) RSSB (£70k)
42. Review of cross wind effects on road vehicles (2007-08) Met Office (£20k)
43. Studies of the Birmingham heat island (2008-2011) Birmingham City Council (£15k)
44. Review of the effects of climate change on wind loading (2010) NERC (£10k for 1st phase, £20k for second phase)
45. UK Climate Impacts Study – Transport sector (2009-2010) DEFRA (£10k)
46. The modelling of oat lodging (2010-2013) ADAS (£12k)
47. The measurement of wind loading on trackside structures (2010-2011) RSSB (£60k)
48. Assessing railway bridge scour (2011-2012) RSSB (£14.5k)
49. Train slipstream effects on waiting passengers (2011-2012) RSSB (£14.5k)
50. Support for Birmingham University partnership (2011-2016) Network Rail (£1.6m to University, £145k to investigator)
51. Measurements and risk analysis of tunnel pressures on Midland Main Line (2012) Network Rail (£15k)
52. Measurements of train slipstreams for overhead electrification train (2012) Network Rail (£20k)
53. Mathematical model for wind induced forces on oats (2012) DEFRA (£12k)
54. REWARD (2012-2013) Network Rail (£85k)
55. TRACCA phase 1 (2013) RSSB (£16k)
56. Literature review on train aerodynamics for the FRA (2013), Arups (£10k)

57. Expert Advice (2013) Wakefield Coroner (£8k)
58. Aerodynamic measurements for HS2 Phase 1 (2013), HS2 via Arup. (£66k)
59. Development of a model for lodging risk in oilseed rape (2013), DEFRA (£12k)
60. Development of Network Rail wind modelling system (2013) RSSB (£16k)
61. Aerodynamic measurements for HS2 Phase 2 (2013), HS2 via Arup (£60k)
62. TRACCA Phase 2 (2014-2015) RSSB (£200k)
63. Testing of Class 345 vehicles for Crossrail, (2014-2015) Bombardier (£50k)
64. Study of trains running through flood water (2014-2015) RSSB (£150k)
<http://www.rssb.co.uk/pages/research-catalogue/t1052.aspx>
65. Improving lodging resistance in oats (2015-2018) Teagasc Walsh Fellowships (£80k)
66. Effectiveness of station canopies, funded through NR partnership (2016), approx. £60k
67. Air pollution in railway stations, funded through NR partnership (2016-2017), approx. £80k
68. Skye Bridge wind restriction study (2015-16), Transport Scotland, £8k
69. Full scale measurements for RAIB Twyford investigation (2016), £5k
70. Wind effects specification for HS2 train procurement, Arup (2107), £5k
71. Wind warning system for Forth Crossing, Arup (2107), £5k

