Brunel University London

Partnering for Impact: making a difference through collaboration

Professor Julia Buckingham

Vice-Chancellor and President

Brunel University London

Brunel, an introduction

Brunel University London

- Established as Brunel University in 1966
- Excellent research links with industry
- Strong international dimension
- Excellent graduate employment record
- Young, ambitious, agile

THE ONE HUNDRED UNDER FIFTY

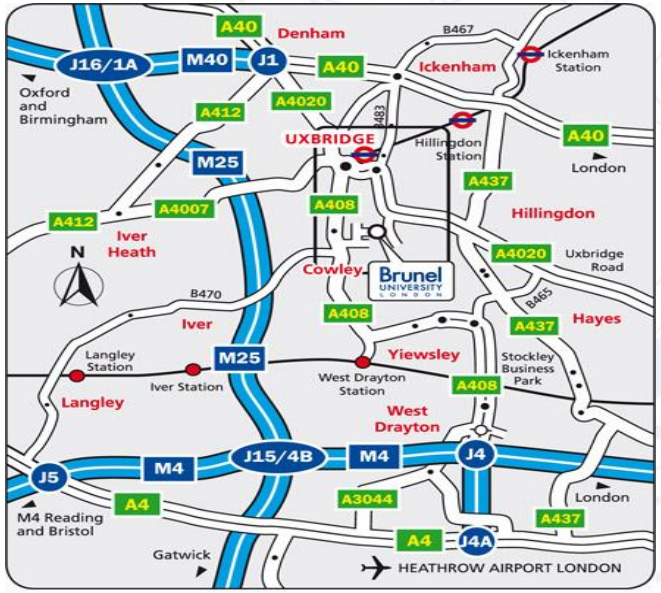
- *"showcasing not those institutions with centuries of history, but the rising stars which show great potential"*
- *Brunel climbs to 25 in top 100 global universities under age of 50*
- "Brunel has done particularly well to break into the top 25 this year, based on its impressive international outlook, and strong research citations score."

Phil Baty, Editor of the THE rankings

About Brunel

- Multidisciplinary Research Intensive
- 14,000 students
  - 9,500 undergraduate – 14% overseas
  - 4,500 postgraduate – 50% overseas
- 2500 staff – approximately 25% from outside the UK
- Campus - based

About Brunel



Our Organisation

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- Major reorganisation in 2013/14 from eight schools and multiple small research institutes to three Colleges and three interdisciplinary Research Institutes

- Purpose
  - Enhance academic cohesion and collaboration
  - Enhance the education and broader experience we offer our students
  - Focus and grow our research activity
  - Align the professional services and support systems to the academic needs of the University.
- Rebranded to raise the profile of the University

Our Colleges and Academic Departments

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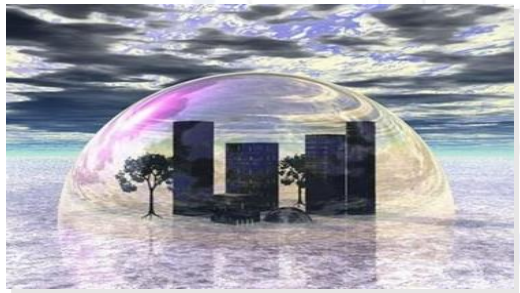
Engineering, Design and Physical Sciences

- Computer Science
- Design
- Electronic and Computer Engineering
- Mathematics
- Mechanical, Aerospace and Civil Engineering



Business, Arts and Social Sciences

- Arts and Humanities
- Business School
- Communication, Media and Social Sciences
- Economics and Finance
- Education
- Politics History and Law

Health and Life Sciences

- Clinical Sciences
- Health Sciences

Colleges

- All academic staff are based in a Department within a College
- Discipline-based undergraduate and postgraduate education – business facing
- Academics either perform discipline-based research or research within one of the interdisciplinary research institutes.
- Strong academic leadership
- Increasing grant income and building reputation and profile
- Delivering socio-economic and public benefit

Our Research Institutes – a focus for challenge-led research

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Environment, Health and Societies

Health and Environment
Healthy Ageing
Synthetic Biology
Biomedical Engineering & Healthcare Technologies
Health Economics
Social Sciences and Health

Energy Futures

Advanced Engines and Biofuels
Energy efficient and Sustainable Technologies
Smart Power Networks
Resource Efficient Future Cities

Materials and Manufacturing

Structural Integrity
Liquid Metal Engineering
Micro-Nano Manufacturing
Materials Characterisation and Processing
Design for Sustainable Manufacturing

Research Institutes - focus in internationally competitive areas

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- Clear focus of activity, aligned with national, international and industrial funding priorities
- Strong Academic leadership
- Provide access to unique techniques, methodologies or equipment
- Draw on expertise to put together unique multidisciplinary teams
- Developing unique strategic partnerships with businesses and academia to solve problems and deliver impact
- Increasing grant income and building reputation and profile
- Delivering socio-economic and public benefit

What makes a Research Partnership strategic?

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- A strategic business partner influences the University's research directions and the research results influence the partner's business strategy and deliver impact

- A strategic research partnership enables two or more universities to bring their specialist expertise together to provide added value to address a specific research challenge

Developing Strategic Partnerships

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- Key priority for Brunel in order to:
  - support high quality education and enhance the student experience
  - support high quality research
  - build research and education capacity
  - achieve impact
- Aligned to academic strengths, bringing together complementary expertise
- For mutual, long term benefit

What makes an Education Partnership strategic?

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- Building capacity - in industry or academia
- Sharing expertise to aid programme delivery
- Shared delivery of programme
- Collaborative development of innovative approaches to teaching and assessment
- Offering students and/or staff a transnational experience

NSIRC
National Structural Integrity Research Centre

- World's first educational establishment offering industry-driven interdisciplinary research and postgraduate degree programmes in structural integrity
- Based at TWI Headquarters in Granta Park, Cambridge

Challenge:

Lack of suitably qualified engineers and scientists in the field of structural integrity

Need for an integrated approach to developing solutions to address the design, service life and safety of components, assets and structures (materials, signal processing, mathematics, design and manufacturing processes)

NSIRC – a £90 million initiative

- The Centre
  - Led by TWI and Brunel, building on 14 year relationship
  - Industrial direction/ funding from TWI, BP, Lloyds Register
  - 8 UK partner universities

Engineering Hall

- Mission
  - Train over 300 PhD students and 200 MSc students and
  - Undertake industrially relevant, inter-disciplinary research in the structural integrity of materials, equipment, infra-structure and manufactured goods

- Funding
  - £15M Higher Education Funding Council England
  - £18.65M UK Regional Growth Fund
  - £45M Industry cash (PhDs, research programmes)
  - £12.5M Brunel (11 new academic posts)

NSIRC – the facility

Advanced Metals Casting Centre

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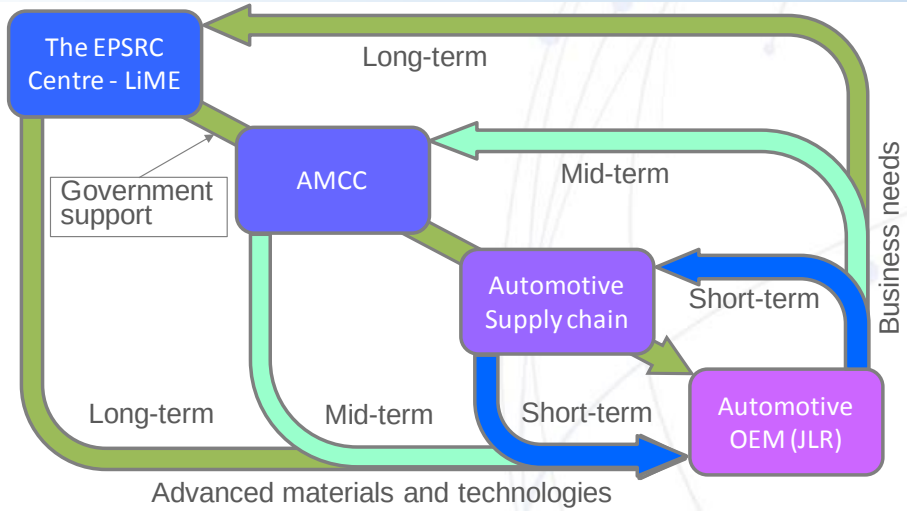
- Provide a national facility for light metal casting research and industrial scale up for the automotive and engineering sectors
- Develop a new generation of recycling-friendly advanced metallic materials with reduced cost
- A seed for a national metals research park at Brunel

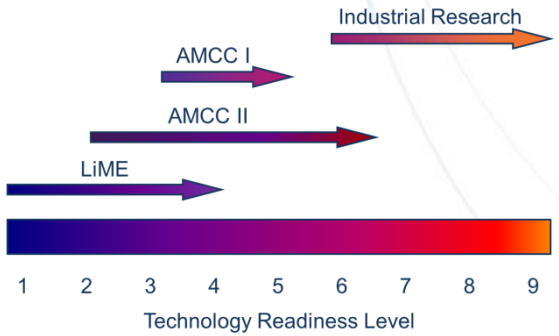
Challenge:

- Global sustainability of metallic materials
- Cost and time to bring laboratory discoveries to market
- Re-building the UK metals casting supply chain

AMCC Positioning



AMCC provides a key stepping stone to deliver the impact of BCAST's fundamental research



- Original Equipment Manufacturers (OEMs) work with their supply chain for short term product introduction and problem solving
- OEMs work with BCAST directly or through the EPSRC Centre - LiME for long term research
- OEMs work with BCAST through AMCC for medium term R&D to
  - Scale laboratory developed technologies up to production/demonstrator scale
  - Shorten the time to bring laboratory discoveries to market
  - Carry out R&D that neither they nor their suppliers are able to do

AMCC Phase I - July 2013

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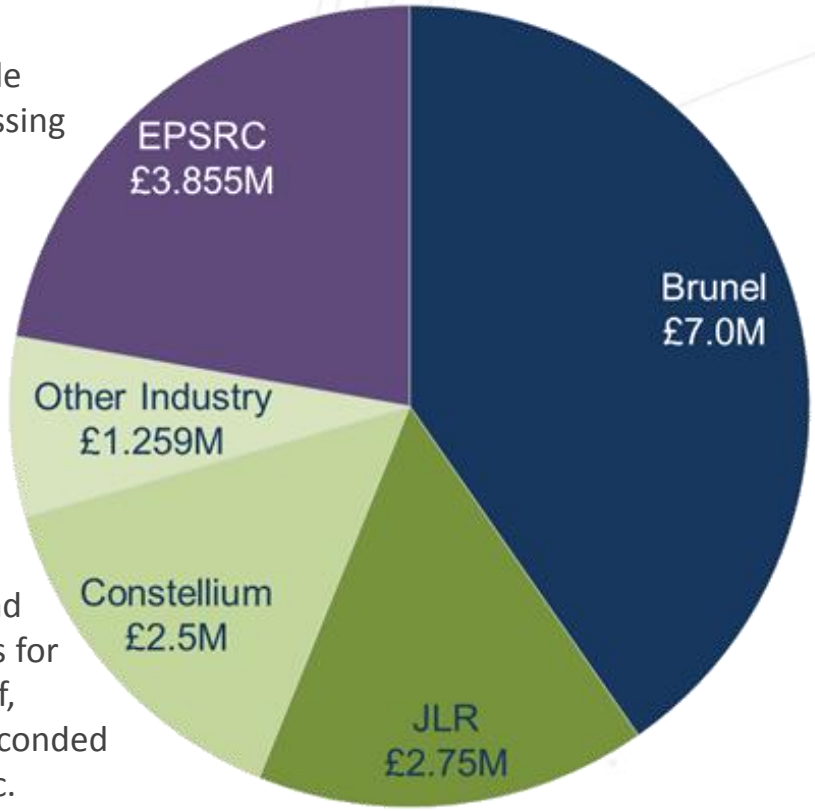


Industrial scale metals processing equipment

Additional equipment
Building
Services
Personnel

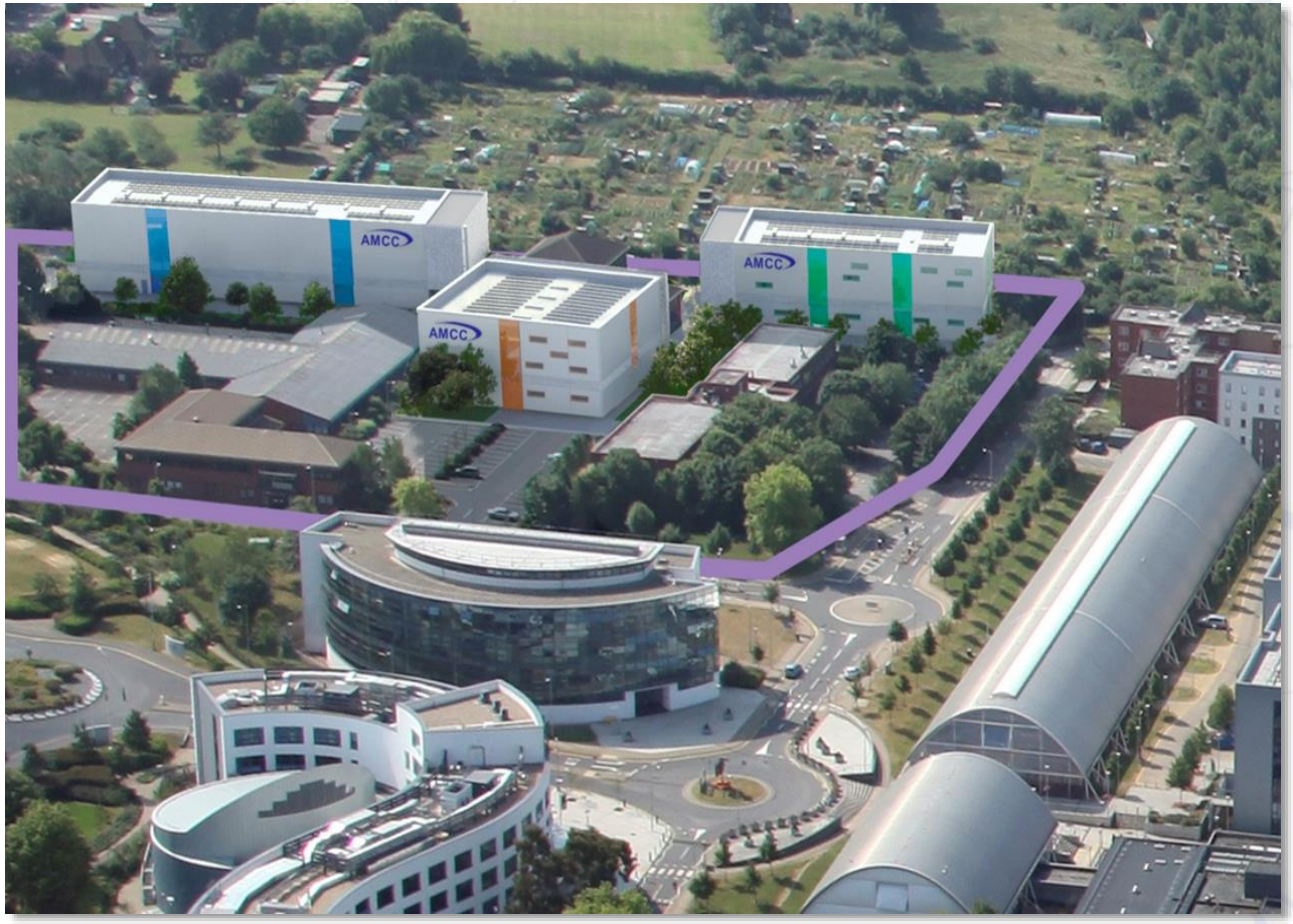
Cash & in-kind contributions for research staff, materials, seconded engineers etc.

Jaguar
Land Rover
Constellium
Henrob
Innoval technology
JVM Castings Limited
Meridian
Norton Aluminium
Sarginsons Industries Ltd

AMCC Phase II – March 2015

- £80M further investment
- HEFCE £15M : £62.5M cash & in kind from the private sector
- An additional ~1,500 m^2 building
- Further processing equipment
- Analytical and characterisation instruments to support AMCC processing research
- Modelling and simulation facilities
- Broadening research into aerospace

Metals Research Park



National Centre for Sustainable Energy use in Food Chains (CSEF)

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Vision

- To be a premier Centre for research into energy, resource use and sustainability of the food chain with international reputation, visibility and impact

Challenge :

- Food production contributes around 30% of Europe's CO^2 emissions
- New technologies and knowledge are required to reduce energy and resource use, as well as related costs and environmental impacts in the food chain

National Centre for Sustainable Energy use in Food Chains (CSEF)

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Professor Tassou, Director of CSEF (left) and Professor Azapagic, Co-Director of CSEF alongside the plaque dedicated to the new facilities

Investment
£6M RCUK
£6M industry
£3M Brunel
Plus over £4M in project funding
Partners Universities of Birmingham and Manchester

Collaborators Over 40 companies including retail, food processing, distribution, packaging and waste, incl.

M&S EST. 1884
BAKKAVOR
NFF NORTHUMBRIAN FINE FOODS
spirax sarco
Hydropac
Kraft
REFRIGERATION A Hinarre Company

Research Institutes' Achievements

- Research Institutes are already catalysing:
  - Investments in areas of world class research
  - Strategic partnerships to maximise impact
  - New interdisciplinary collaborations to address global challenges

Strategic Education Partnerships

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- Academic: China, South East Asia, Brazil, Bahrain, Europe
- Business and Healthcare providers: UK, Australia
- Examples
  - PhD in Residence – Bahrain
  - Blended learning programme – Germany
  - Foundation College – Australian
  - Workforce supply with work-based learning – multiple
  - Early stage programme delivered by overseas partner – students progress to Brunel for 1 – 3 years of an undergraduate degree and progression to postdoctoral study – multiple
  - Student exchanges – China, Hong Kong, Malaysia, USA, Canada
  - Staff exchanges

Thank you