Professor Martin Mayfield

Professor of Engineering Design
Interim Director of the Urban Institute
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Qualifications

CEng BEng (hons) MIMechE MCIBSE

Profile

Professor Martin Mayfield is a Chartered Engineer and a member of the Institution of Mechanical Engineers. He has recently taken up the Chair of Engineering Design at the University of Sheffield after 25 years in practice as a Director of Ove Arup and Partners Ltd, holding a portfolio including Sustainable Building Leader for the UK, Middle East and Africa, Education Leader for the UK, Middle East and Africa and Leader of the Arup office in Sheffield, leading a team of professional Engineers, working on a diverse array of projects in the UK and overseas. Within this team, he led a Built Environment research group, providing thought leadership to the wider group and Arup on the future of sustainable design and the opportunities that this will

present to designers, commercial research projects for clients, identifying and driving the research strategy, horizon scanning and leading the technical progression of sustainable building design.

He has led and supported many applied research projects for major industrial clients, IMechE and the TSB covering a range of issues in the field of sustainable and low energy building design including projects such as the definition of a route to zero carbon for the Further Education sector, defining Scope 3 carbon footprinting for the Higher Education Sector and the design of the UK's only Hydrogen powered zero carbon building. He is a regular speaker at conferences on Sustainable Buildings and Cities.

Martin is passionate about helping to develop Engineering Graduates capable of making a difference in the world through their ability to engage with society to deliver creative engineering solutions to address global issues.

His research interests are in the Built Environment, City Systems and infrastructure interdependencies, in particular Urban Energy Systems and how they respond to stress and shock events.

Current research projects include:

- Smart Grid evolution
- Integrated infrastructure & devolution
- Engineering challenges for Climate Change adaptation in retail buildings
- Reducing end use energy demand through multi channel information streams

Activities and Distinctions

- Sheffield City Region Low Carbon Group Board member
- Sheffield City Region Growth Plan Steering Group Member
- Sheffield City Region Growth Plan Infrastructure Task & Finish Group co-leader
  Editorial Panel of The Engineering Sustainability Journal

Grants

- **Future City Platforms**

  Working with a European City to develop the concept for elastic geo-spatial platforms for future city development.

- **University of Sheffield, Climate Change Adaptation Study**

  Study to consider and establish how a Building would be designed under the projected 2050 climate criteria.

- **Energy Strategy, University of Sheffield**

Development of a detailed energy strategy and scenario planning tool for the University.

- **Resilience Scoping, University of Leeds**

  A study to establish the critical infrastructure that support the University and establish a strategy for ensuring that these are managed. This included learning and research strategies, governance, Energy and IT infrastructure.

- **Technology Strategy Board Future City Study, Sheffield**

  Creating the concept and developing the strategy for Sheffield's £24m Future Cities proposal.

- **Environment Resilience Strategy, Major UK City**

  Martin lead the development of a broad ranging and long term strategy to deliver environmental resilience for a UK City.

- **Energy Strategy, Major UK City**

  Development of an energy strategy and scenario planning tool for a large UK city.

Teaching

In Engineering education I have consistently innovated appropriate teaching methods and promoting best practice in the pedagogy of sustainable design. My practice-led teaching promotes a systemic approach to design that works within the carrying capacity of the planet. Students are encouraged to explore and develop their understanding of the link between Engineering Design and it impact upon the planet through a clear framework of processes and tools that allow them to contextualise their Engineering solutions. Cutting edge sustainable design techniques and tools are continuously introduced as they are developed.

- Contribution to development of and teaching on Y3 Integrated Design Project (with particular focus on Engineering Sustainability)
- Supervision of Undergraduate Individual Research Projects
- Supervision of MSc Individual Research Projects
- PhD Supervisor
- Staff Member Responsible - Building Tectonics (Sustainable Buildings (CIV201)
- Contribution to Finance & Law for engineers module (with particular focus on strategies for building businesses)

Selected publications

Conference Papers

- Decarbonising Data Centre Infrastructure Data Centre Transformation Conference 2013
- Technology and solutions over the next 5 years - a study for a Major UK Construction Contractor. March 2012
- How delivering upon the carbon reduction targets can improve the academic and financial position of a University - Greening Higher and Further Education Conference 2012.
- Building Design for Warmer Climates - various conferences 2010-11
- Route to Zero Carbon Colleges published by UK Government 2008
- Sustainable School Design - International Schools Conference 2008
- What do Engineers need from Building Simulation Tools - IBPSA Conference, September 2006
- Hitting the 80% carbon reduction target - LSC Annual Conference 2008
- Optimising Low Carbon Design for Buildings - Hong Kong Sustainable Design Conference, September 2008
- Sustainability in Design - LSC Annual Conference 2005
- Towards the Zero Carbon School - IMechE Conference November 2006
- Designing High Quality Learning Environments - BSEC Annual Conference 2005