Energy Materials – Meeting the Challenge

Making the UK the best place to do business in materials
‘Energy Materials – Meeting the Challenge’

Derek Allen,
Chairman,
MatUK Energy Materials Working Group

Burleigh Court, 9-10th October 2008
Setting the Scene

- Background
- Why Energy?
- The Strategic Research Agenda (SRA) and implementation
- Structure and objectives of the Conference
The History

- The Materials Innovation and Growth Team (IGT) was set up in January 2005 by the UK Government to review materials industries. Its scope covered:
  - All materials, production, supply chain issues
  - Engaged Policy & stakeholders

- It reported in March 2006 after 15 months work

- Key outcome-to form MaterialsUK (MatUK) to implement its recommendations to develop a strategy for Materials in the UK

- MatUK formed a number of Working Groups in priority areas identified by the IGT
Working Group Structure

Materials UK

- Policy & Regulation
- Science & Technology
- Materials in Construction
- Sustainability
- Education & Skills
- Energy Materials

Making the UK the best place to do business in materials
Who has been involved in the Energy Group?

- Advisory Committee,
  
  *Industry:* Alstom, EON UK, Johnson Matthey, UKAEA, Siemens, Pilkington, Doosan Babcock, British Energy, BP, Rolls Royce, BNFL, Corus, Alcan, National Grid, RWE, AREVA, Pilkington, Rolls Royce Fuel Cells, UKAEA, Oxford Instruments,

  *Other organisations:* Materials KTN, IoM3, MoD, QinetiQ, NPL, Manchester University, TWI, Oxford University, BERR, Imperial College, Cranfield University, UKERC, EPSRC, Namtec, UKTI and RDA’s.

- Secretariat supplied by BERR

- 100’s of companies around the UK have been consulted throughout the process
Why Energy?
Three Major Energy Challenges

Security of Supply

Blackout Britain

Not since the 1970s have we been at greater risk of power cuts. So is it time to stock up on candles?

Fuel costs to rise again

Affordable Energy

Climate change

The China Crisis

Speculat growth now biggest threat to environment

Consumption

China’s growing middle class is driving a boom in the demand for energy and raw materials. China and India together now consume more steel, cement, electricity and coal than the United States.

Wealth

China is already the largest provider of steel, cement, electricity and coal. China is expected to overtake the United States as the world’s largest economy by 2030.

Oil

China is the biggest consumer of oil in the world. China currently consumes more oil than the United States and is expected to overtake the United States as the world’s largest consumer of oil by 2030.

Forestry

China is already the largest provider of forest products. China is expected to overtake the United States as the world’s largest consumer of forest products by 2030.

Global warming

China is already the largest emitter of greenhouse gases. China is expected to overtake the United States as the world’s largest emitter of greenhouse gases by 2030.

Cars

China is already the largest consumer of fuel-efficient cars. China is expected to overtake the United States as the world’s largest consumer of fuel-efficient cars by 2030.

Making the UK the best place to do business in materials
Drivers

GDP Growth

Installed Base Growth ~ linked to GDP

World Real GDP ~ 3% pa

Installed Base ~ 3% pa

Ageing Fleet

66% of +30 year fleet is fossil

Environment

Market Forces

Forecast

Making the UK the best place to do business in materials
Our Objectives

The SRA is Industry led & market driven

A means by which we can;

• Identify and deliver materials solutions to the energy sector to help meet Energy Policy objectives
• Identify business opportunities for the materials community in UK

and develop;

— Coordination
— Long term strategy and funding policy
— A unified ‘voice’ with influence
— International links

which will;

• Advise government and funding agencies on priority areas
• Help define UK priorities for overseas funding where UK has direct input (FP7)
Developing the Strategic Research Agenda

Supply chain mapping

- fossil
- nuclear
- renewable
- T, S, & D

SRA

DP

Deployment

Strategy development

Technology scoping

The UK capability

Making the UK the best place to do business in materials
What have we delivered?

…4 key technology scoping reports and the SRA published December 2007
What have we achieved?

- Worked with the Technology Strategy Board to help develop the Autumn 2007 Call on Energy Materials (£12m)

- Through chairmanship of EuMat worked within FP 7 to deliver a call on Energy Materials in December 2007
The Strategic Research Agenda

Why is the SRA unique?

- Delivery of the UK Energy policy will require a balanced portfolio of low carbon technologies to deliver its objectives.
  - This means that a wide range of underpinning materials R&D is needed
- This has instigated a detailed materials review across the numerous energy technologies from generation to storage. The 1st in UK but also in Europe
- It speaks on behalf of the community-industrially driven by need and opportunity
- Its recommendations are already advising and influencing both the UK funding agencies and Europe
The SRA covers the following issues:

- Overview of energy market
- UK materials supply chain
- Sustainability/Natural resources
- Skills
- International collaboration
- Technology challenges
- Funding
- Recommendations
Key Areas for Materials to address

The recommendations of the Task Groups have been distilled down into 3 key common technology themes where UK materials R&D should focus:-

• Reducing time to market and life cycle costs (eg. solar, fuel cells, marine)
• Higher performance in harsher environments (eg. Carbon capture, co-firing, nuclear)
• Improved life management and reliability (eg offshore wind, nuclear)
7 key recommendations to support delivery

• Communication
• Establish Coordination & Delivery Body
• Stable/Sustainable funding
• Energy Materials Knowledge Management
• Innovative Technology Transfer
• International Engagement
• Development of Skills and Resources
Implementing the recommendations of the SRA

- Key stakeholders perspectives
- How to meet the technology challenges and benefit the UK
  - Fossil
  - Renewables
  - Transmission, distribution, storage
  - Nuclear
- An international perspective from the USA
- Networking, exhibition and posters
- Defining the next steps to implementation
The Challenges:- Looking ahead

- Global electricity generation predicted to almost double by 2030
- 15% energy from renewable sources by 2020 (ie >30% electricity from renewables)
- 7000 new wind turbines by 2020
- Zero Carbon homes by 2016
- 10 billion Euro investment in 12 CCS plants across Europe
- Globally the overall value added of the low carbon energy sector could be as high as $3 trillion per year worldwide by 2050, it could employ more than 25 million people in jobs.
- etc, etc
Don’t believe everything you are told.

Please engage, challenge and debate.

 .............and enjoy!!
Energy Materials – Meeting the Challenge

Making the UK the best place to do business in materials