e·on | Engineering

UK-US Workshop on Collaboration in Fossil Energy

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Plant Integrity – Materials Team

e·on

- One of the largest investor owned Power and gas companies in the world

- 88,000 employees world wide (around 17,000 in the UK)

- EUR82 billion in sales last year

- With respect to Generation, interests in
  - Coal fired
  - CHP/CCGT
  - Nuclear
  - Renewables – wind, tidal, solar, electric vehicles etc

˘E.ON are involved in all the research areas identified as a priority by this workshop

- Advanced materials and lifetime assessment
- CO_2 Capture Technologies
- Sensor and instrumentation

- E.ON is involved in numerous multipartner, multinational collaborations

- E.ON Engineering is a consultancy to E.ON (and the energy sector in general) and is the R&D hub of E.ON

- E.ON like collaborative research

Why I was invited here

˘E.ON Engineering are the lead partners in a £1.7 million collaborative research project called IMPACT

- This project is, amongst other things, aimed at reducing carbon emissions by increasing power plant efficiency. This efficiency will be realised by operating power plant at higher temperatures and for this we require more advanced steels than we have currently available.

- Funded by both industry and the British Government's Technology Strategy Board

- 6 Industrial Partners (E.ON, Alstom, Doosan Babcock, RWE nPower, National Physical Laboratory, Goodwins Castings) and 1 academic Partner (loughborough University)

IMPACT – Innovative Materials, Design and Monitoring of Power Plant to Accommodate Carbon Capture

˘This project will combine materials, welding, design and component monitoring R&D projects on new steels for thick section high temperature header, pipework and steam turbine materials in ultrasupercitical 600°C+ plant.

•The aims are:

- to develop better materials than the current world leading alloy P92
- to validate the life-limiting creep performance of welded joints (Type IV cracking)
- to develop a better design route which will prevent recurrence of the costly premature failures being experienced on current (P91) plant
- to support safe operation under the most demanding high temperature conditions by developing new techniques for local strain monitoring and condition monitoring.

IMPACT

- Develop an advanced creep resistant steel for retrofit and for new build ultra-super critical plant
- Minimise or eliminate Type IV cracking
- Tonnage scale production
- Demonstrator tube to be installed in UK plant by 2013

E.ON Engineering Contacts

Carbon Capture & Storage

Post-combustion, pre-combustion and oxyfuel capture technologies

- Robin Irons – robin.irons@eon-engineering.com

CO2 compression, transport, injection & storage

- Tim Hill – tim.hill@eon-engineering.com

Environmental assessment of capture technologies

- Tim Hill – tim.hill@eon-engineering.com

E.ON Engineering Contacts

Sensors and Instrumentation

Advanced creep monitoring techniques

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Remote sensors and condition monitoring

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Advanced Materials

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