

Skills and training for the low carbon agenda

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Agenda

- Context
- Skills challenges for the low carbon economy
- Low carbon skills for businesses
- Equipping skills for the next generation
- Recruiting the new workforce in low carbon

National context

- 2007 UK Energy Strategy: energy security; efficiency; clean supplies; fuel poverty
- 2009 UK Renewable Energy Strategy: 15% consumption by 2020
- De-carbonisation of electricity generation and supply
- Low carbon heat generation, supply & use
- Increasing local generation and supply
- Climate Change Act: 80% reduction in CO₂ by 2050

Regional context for supporting low carbon technologies

- Regional economic strategy: developing a secure, low carbon energy infrastructure for the region
- Reducing CO₂ emissions – 34% by 2020
- Increasing non-domestic and domestic energy efficiency
- Recognising geographical limitations
- And regional strengths: R&D; Innovation; Manufacturing; Supply Chains; Demonstration; Companies
- Key opportunities: Renewable Energy Technologies; Decentralised Energy; Energy from Waste; Bioenergy
- >70,000 already employed in low carbon in the region

West Midlands regional priorities

Low carbon economic priorities

- Addressing the productivity challenge
- Support for high value industry sectors - including low carbon technologies, advanced manufacturing, ultra low carbon vehicles

Skills priorities

- Appropriate and sufficient skilled people
- New generation of employees
- Tailoring skills provision for the local market

Delivering a low carbon economy

- Decarbonising the power industry
 - Large scale power generation, infrastructure renewal
 - Microgeneration, smart grids
 - Energy from waste
 - New nuclear
- Decarbonising industry
 - Improving energy efficiency
 - Alternative fuels - hydrogen, biofuels
- Decarbonising buildings
 - Retrofitting existing buildings
 - Zero-carbon homes
 - Commercial buildings

Wider challenges for the low carbon skills agenda

Current problems

- Shortage of STEM (science technology engineering maths) workers at all levels in energy industries (CBI 2009)
- Ageing workforce, especially in power generation, nuclear
- Low awareness / demand for low carbon related skills

Challenges and opportunities

- Britain needs to build up its workforce skills ready for post-recession 21stC
- Need greater uptake of STEM subjects at all levels
- Need skilled management and leadership with low carbon principles in mind
- Newer skills specific to the transition to a low carbon economy - energy efficiency, carbon auditing, carbon trading, resource efficiency, IT
- Building business/academic links to meet the innovation challenge
- Develop purchasing power of low carbon procurement

2009 study: W Midlands low carbon skills and market challenges

Survey and interviews with low carbon and environmental technology companies

Company performance and prospects

- Overall strong business performance despite the economic downturn
- Employment increased in about 50% of companies interviewed
- Very positive prospects for future growth across all low carbon markets - renewable energy (wind, solar), waste to energy, biogas, recycling, water and waste water

Skills issues

- Currently few skills or recruitment difficulties
- But recognise future demand will increase
- Specialists e.g. design engineers, process engineers in demand
- Carbon footprinting, hydrogen, recycling - new skills areas

Regional market opportunities and skills needs

Buildings retrofitting,

- e.g. *Birmingham Green New Deal:*
- Retrofitting up to 25,000 homes and businesses

Skills needed:

- construction
- plumbing
- installation
- customer service
- manufacture
- *Opportunities for local firms*



Waste disposal in the West Midlands to 2020

- 100 new disposal sites by 2020
- 4mt extra waste
- Pyrolysis, gasifiers, energy from waste, digesters, composters...
- Up to £4bn investment, 4,000 additional staff



Skills needed:

- engineers - electrical, heating, mechanical, process
- manufacturing - boilers, turbines, tanks, shredders...
- chemists, physicists
- construction, civil engineers
- operatives

Wind supply chain

- UK offshore opportunities for 25 GW new build by 2020
- £100bn investment
- 57,000 jobs by 2020
- Survey
- Foundations
- Turbine and substation
- Operation and maintenance

- ***Skills needed***
- mechanical and electrical engineering
- research
- controls
- grid connections
- networks
- maintenance



photo Converteam

Building from existing skills - diversification

Current job	Core training	Additional skills	New low carbon job
Electrician, gas fitter	Apprenticeship, NVQ, C&G	Solar, PV knowledge	Solar fitter
Offshore oil and gas maintenance	Apprenticeship, NVQ	Technology specific	Offshore wind technician
Architect	Degree, masters, work experience	Energy efficiency and low/zero carbon knowledge	Low carbon architect

Regional academic links with business

- **Walsall College with Aston University**
 - Technical and operational training in electrical power engineering
 - NVQ in power distribution developed through Walsall
 - Foundation degrees through Aston
 - Fits with student full time jobs (E.ON)

- **Aston University**
 - Bioenergy Research Institute - strong links with regional SMEs for research/industry studies

Birmingham City University

- £1.7million Heavy Diesel Emissions Engineering (HDEE) Centre of Excellence, with JCB, provides facilities for testing large vehicles

Warwick University

- WISER Warwick Institute for Sustainable Energy and Resources
- Energy efficiency and power engineering - with Converteam, Modec and others
- Birmingham Science City Research Energy Efficiency and Demand project

Birmingham University

- £5.5million Doctoral Training Centre in Hydrogen & Fuel Cells – training the next generation of technologists and researchers
- Leading Birmingham Science City Hydrogen project

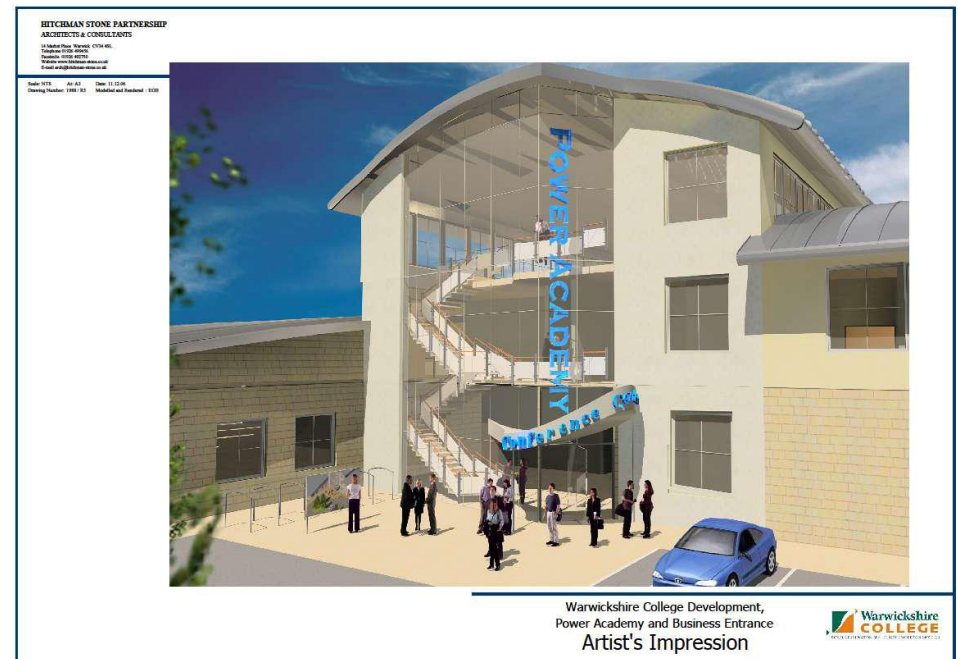
Warwickshire Power Academy

Opening Sept 2010

Working with industry and training bodies:

- Alstom Power
- Babcock
- Converteam
- Rolls Royce
- Engineering Construction Industry Training Board (ECITB)

Power technicians training for new generation of power stations



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Converteam staff development

- Sponsored postgraduates, PhD, MBA
- PhD student placements
- Graduate training scheme
- Undergraduate and CPD support
- Apprentices - 4 year modern apprenticeships, to C&G, HND, foundation degrees, with local colleges

Knowledge Transfer Partnerships

- Linking graduates - academics - business
- Collaboration between company partner and academic institute
- Recently qualified graduate recruited to work on a specific project
- Timescale 10-40 weeks, or 1-3 years
- Over 3,000 KTPs to date
- All business sizes eligible - micro to large
- Any business sector
- Short term practical or longer term strategic assignments most beneficial for company
- Share expertise between both partners, academic supervision
- Cost to SME about 1/3 of full costs

Benefits of partnerships between industry & HE

- Company products form central focus of training
- Improves college resource base
- Trainees learn company culture
- Up to date product knowledge for staff and trainees
- Trainee skills aligned with company needs
- Modern technology awareness for company staff

- (courtesy of Tony Parkin, Warwickshire College)

Creating the future workforce in low carbon: Science as a career

“Science for Careers”

Aiming to ensure that the UK economy has a workforce with the science skills that it needs

How to increase:

- the number of scientists and engineers in the UK workforce
- the number of people choosing to study science
- numbers of science graduates
- entry to technician careers
- and retain those already qualified



Achieving the next generation of STEM employees

- Jobs in low carbon industries fall within wider science career opportunities
- Improving and raising awareness, advice and guidance for STEM careers choices at school
- Improving work experience placements and course relevance
- Expanding the apprenticeships system to build a new technician class
- Involving businesses, large companies, SMEs
- The role of trade bodies and professional organisations
- Role models

Encouraging the new generation is essential!

- More information and awareness for future employees - schools, careers advice, JobCentre+
- More awareness for companies about access to funding and staff
- New graduates hands-on experience, e.g.
 - AWM's Graduate Advantage - graduates placed into SMEs at low cost
- Linking schools with businesses
 - e.g. Converteam offer schools placements
- National Science & Engineering Week in March annually
 - ThinkTank and others run many initiatives - often with local business assistance
- British Science Festival is in *Birmingham* in Sept

Summary

- Emerging low carbon technologies offer huge market opportunities in high value sectors
- Need to act now to ensure that the workforce is fit for the challenge
- Roles for businesses, colleges, HE to work together to develop and deliver appropriate training
- Need to deliver flexible and fit for purpose training
- Schools and career services are essential
- Support the revitalised apprenticeships service
- Opportunity for supply chain to deliver market need

- Any questions?

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