

**Installer skills to meet the UK renewable
energy target for 2020**

by

Rayner Mayer

EHPA and University of Reading

Proposal for RES directive

- Member States shall develop certification schemes for
- installers of small scale biomass boilers and stoves, solar
- photovoltaic and solar thermal systems and heat pumps

- These schemes shall be based on the criteria laid down in
- annex IV

- Member States shall recognise certification awarded by other Member States in accordance with these criteria

- Article 13 paragraph 3

Required installer skills

- knowledge of basic plumbing skills including provision of hot water and installation of central heating systems (NVQ, City and Guilds)
- principles of heat pump systems (BPEC, CITB)
- selecting and installing specific manufacturer's equipment
- designing cost effective installations for UK dwellings
- maintenance and servicing

Generic principles of heat pumps systems (EU CERT)

- Design and manufacture of heat pumps
- Compressors and refrigerants
- Types of collector systems
- Choosing the heat distribution system
- Sizing the system and specifying
- Managing the installation

Origin of EU CERT course

- Course developed and trialled by a European collaborative project
- Synthesises best practices from countries with a large accredited installer base like SE, CH, AU, DE
- Common quality level and sustainable quality assurance
- Covers all types of heat pump systems including ground source
- Network for exchange of experience and knowledge
- Initial courses held at Grimsby Institute of Technology

CITB initiative

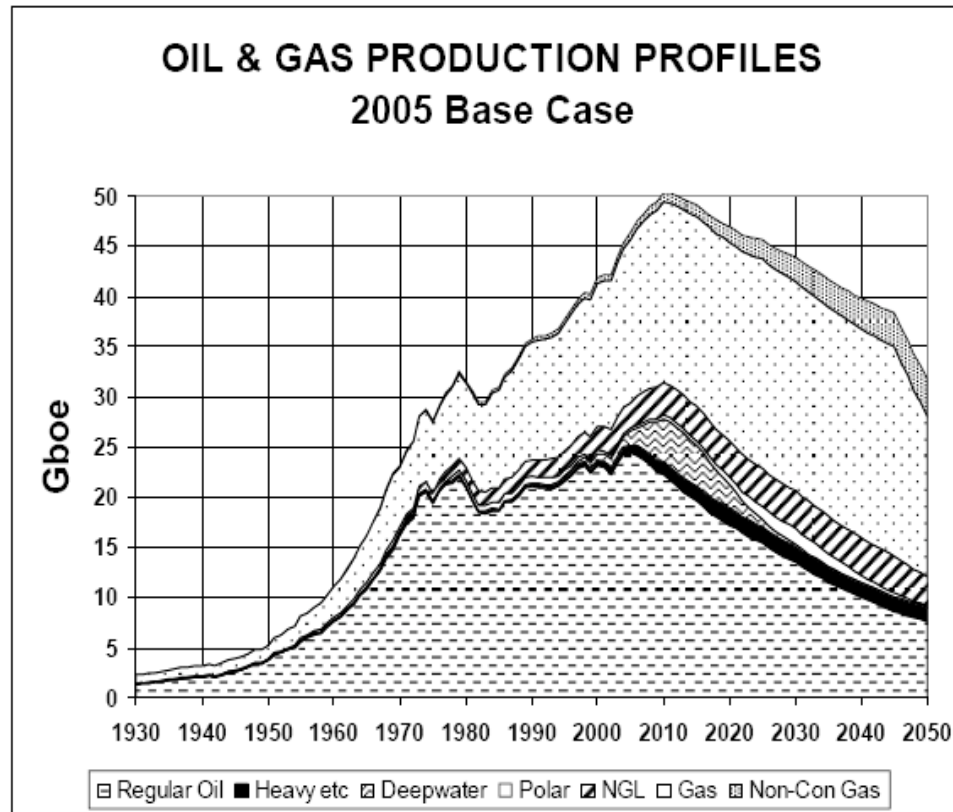
- BSRIA (a member of the EHPA) has been discussing with CITB the provision of EU CERT courses for past 3 years
- CITB have now recognised the need to provide training for installers because the number of heat pump installations is likely to rise rapidly
- CITB are willing to provide such courses at up to 20 locations around the UK where air conditioning systems are also taught
- BSRIA are willing to provide long term support to CITB and continue to represent UK on the EHPA's education committee

Knowledge of specific systems

- Training provided by manufacturer
- Selecting and specifying the system
- Installation
- Commissioning and checking system performance
- Maintenance and repairs
- Warranty

Economics of peak oil and gas

The General Depletion Picture



Installations for new build

- Building regulations being stiffened progressively 2005, 2010, 2013 and 2016 via Code for Sustainable Homes
- Will result in high level of insulation, air tight buildings and successively reducing heat losses of 40, 30 and 20 W/m²
- So heat pump will be preferred choice with low temperature distribution system either underfloor or ducted air
- Size heat pump for design temperature plus 20%; no back up
- for domestic hot water, install pressurised hot water cylinder with indirect coil and top up temperature via heating coil

Installations in existing buildings

- Generally low insulation level compared with current build
- Calculate heat loss and cost of increasing insulation to level close to current standards
- Extra insulation will also decrease condensation levels
- Size heating system for reduced heat loss
- Consider whether improvements to heat distribution system can improve system efficiency
- Grants are available for adding insulation as well as heat pumps

Annual savings and carbon reduction

	Number of installations by 2020 (millions)	Investment cost (£k)	Possible Savings in utility bill (£)	Carbon savings (tonnes CO2)
Increased insulation	10	£4k (cav)	£250	2
		£9k (solid)	£500	3
Solar thermal supply of hot water	3	£4k	£225 (e)	0.6
			£90 (g)	0.3
Heat pumps in insulated home	Up to 1	£9k	£600 (e)	5
			£400 (g)	2

Low carbon homes

