



Hannover-Bristol Green Energy Summit – Friday 10th June

Workshop 2: Solar Photo Voltaic Cells

Facilitated by Kieran Highman, Bristol City Council
Reported by Claire Croker, Low Carbon South West
Attendees:

- Gudrun Huper, AS Solar (Hannover)
- Spencer Clark, AS Solar (Bristol)
- David Saunders, Bristol Power Co-op
- Gernot Hagemann, hannoverimpuls GmbH
- Jamie O’Nians, Your Power
- Prof Judy Rorison, University of Bristol
- Dr Neil Fox, University of Bristol
- Jas Singh, Auriga Energy
- John Whiten, Ethical Solar
- Tom Beale, Bristol Energy Co-op
- Beth Aspinall, Southern Solar
- Abdul Raaj, Suka Group
- Stephen Barrett, Solar Sense
- Martin Alder, Optimum Energy

PRESENTATIONS:

AS Solar – Spencer Clark

Global company (including Bristol office) based in Germany focussing on a wide range of high quality PV and solar thermal products and other renewables and an ethical manner of working with clients to create solar solutions appropriate to site. Recently refurbished HQ in Hannover is a local renewables landmark. Live feedback on AS Solar installations is available on the AS Solar website.

Ethical Solar - John Whiten

Ethical Solar works to make installations – materials and process – as low carbon as possible. Use Norwegian manufacturers that use low energy processes, also recycle products eg mounting systems and cables. Ethical stance also includes employment issues – ES makes effort to employ people who have been long-term unemployed. ES have emphasis on community base for energy production.

Bristol Energy Co-op – David Saunders

Bristol needs to encourage power generation locally, because money flows out of the region when power is bought in from elsewhere. Bristol Power Co-op has already secured funding for test installation. Under its community scheme, profits will be divided between a dividend to members and

reinvestment in solar new build. A dividend would also be paid to community centres which help organise the project. The Coop is investigating complementing solar with micro CHP (gas fuel cells).

Dr Neil Fox – School of Physics, University of Bristol

Carrying out research sponsored by E.ON, working on diamond thermionics – nanotechnology approach using diamond powder for solar generation of electricity. Test unit in Cheltenham goes live in the summer. Offers potential to be much more efficient than PV, using smaller units.

Prof Judy Rorison – University of Bristol

Specialist in optical communications, based in Department of Electrical and Electronic Engineering. Working on improving laser technology applications for solar generation of electricity. Would have advantages of huge efficiency improvements over PV, and size – much smaller unit needed. Major part of cost of PV is the mounting structure itself. Manufacturing process for laser units very high tech and expensive, but mass production would bring costs down. Units using lasers already being manufactured, though Prof Rorison's work on intermediate band solar cells is currently theoretical.

Institut für Solarenergieforschung – (Research institute of Solar Energy) - Gernot Hagemann – (hannoverimpuls)

The Institute is a privately run establishment of 150 staff affiliated to the University of Hannover. It researches PV and Solar Thermal issues, and is a certified test centre as well as working on innovations in the field. Examples of current research projects are: the storage of solar thermal energy produced in the summer in the ground, to warm the ground for better heat exchange for ground source heat pumps in the winter; how excess heat produced by PV could be used in a similar way for air heat pumps; glazing PV units with a microstructured light-redirecting foil to allow heat and light through in the winter, and keep heat out in the summer.

GENERAL DISCUSSION

Key conclusion - a 'Bristol Solar' Steering Group to be formed

- Members – local solar companies (including those not present), co-ops, consumers, installers, academics, Bristol City Council, Bristol Green Capital
- Issues for the Group to tackle:
 - Best practice/standards, self-regulation
 - State of the market
 - FIT changes/the comprehensive review (including collection of evidence-based material for submission)
 - Emerging technologies
 - Enabling co-ops
 - Training
- Initial focus Bristol – then spread out to CUBA/SW
- First Meeting – W/c Monday 11 July
- Jamie O'Nians to draw up detailed proposals for the group
- Kieran Highman to liaise with Darren from Green Capital
- Gernot Hagemann invited members to continue discussion at Hannover Trade Fair in April 2012

Other issues discussed:

Economy

- Easier to get investors to invest once a scheme is proven – cf Triodos.
- Good to use local manufacturers/installers – keep money and jobs in local economy - though need to keep balance with quality issues
- There is currently concern about large scale PV projects because of FIT changes. However, money which might have gone to larger schemes may now be available for smaller ones. In addition, large scale projects may become economically viable once costs come down.
- Possible future location of Green Investment Bank not certain yet – might be Bristol. However, what it can invest in not clear at present
- German banks invested in solar early on because of the German FIT scheme. British banks have previously been reluctant to loan for solar projects.
- Need to have better training than MCS in UK – cf Germany
- Munich's economy has boomed because of early investment in renewables – Bristol needs to follow this example.
- Planning in Germany has supported renewables also – hence equipment and investment goes to Germany. Bristol needs to address planning issues.
- People in Hannover work together on carbon reduction – great transport system, positive attitude to renewables, compared with public belief in UK that they are expensive.
- Hannover Government is setting up PV competitions between communities to stimulate uptake – those with the most successful installations win a reward for the community such as a kindergarten

Community ownership

- Hannover remunicipalisation of supply contrasts with UK demunicipalisation. There needs to be stability and accountability of supply. Accessibility and democratisation are important – those without roof space or with unusable roof space, together with those without ready money for current system of installations are denied subsidy. This issue is also being discussed in Germany.
- 'Solar allotments' – community schemes – might be an answer to access issues.
- Current FIT support doesn't distinguish between applications from wealthy individuals and community schemes.
- Diamond/optical developments show that PV farms aren't the answer – better to focus on community/personal installations
- Bristol residents likely to raise money for roof-top schemes through co-ops etc

Grid

- Bristol's roof top survey indicates significant installations of PV possible – the challenge here is the connections to the grid.
- Need to share infrastructure implications – at the moment, if your proposed installation is the one to tip the sub-station over the limit, you get landed with the fee for alteration.
- AS Solar testing 5kw battery to store solar-generated energy until later in the day. Battery could be useful to avoid having to expand grid to cope with peak supply in day, and to integrate with demand for charging of electric cars. UK legislation getting in the way of the battery idea - KH to investigate this issue once SC has forwarded more info.
- Supply/demand issues in grid are a key issue in Germany where high density of installed systems means significant local impact on grid depending on cloud cover.

Technology

- Inverters are the weak link in the PV installations. The costs for upgrading these during the life of the array needs to be built in at the beginning.
- Hybrid panels using heat from PV arrays for air heat pump already on market in Germany.
- Suka Group (part of AS Solar) is working on integrating gas controls with solar generation

Data collection

- Experience in Germany shows data on installations should be collected from the beginning (now having to hunt for it).
- In the future Bristol City Council could sponsor chips making broadband connections between units for data exchange and collection.
- Data on installations could feature on the Bristol Solar mapping project.
- Coops will need data on each part of their installations.
- Money to fund data collection might be available from UK Technology Strategy Board