The Commercial Perspective

Rob Gardiner

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1. The Economic Case for Heat Pumps

Factors to consider:

- **Objective/driver** – cost, to achieve planning or BREEAM
- **Loads** – maximise base loads, reduce peaks.
- **Balanced loads** - Utilise heating and cooling and balance loads.
- **Operating parameters** - Flow rates and temperatures to the building.
- **Efficiency** – CoP, EER, SPF, SEER.
- **Alternatives** - Comparison (Oil, electric, gas) deliveries, no local emissions etc
- **Choices** – Other available technologies (ASHP, biomass, PV, wind, CHP)
- **Costs** - CAPEX & OPEX and ROI.
- **Funding and financial incentives** - grants, RHI.

The Economic case must be made for each GSHP system.

- This does not always happen.
- GSHPs a compelling argument for selection.
- Monitoring and demonstration is key.

2. The Last 5 years

In my view, key points?

- Commercial environment has become increasingly more competitive.
- Fierce 'value engineering' / CAPEX reduction process at the expense of a better OPEX solution.
- Projects in the Construction Supply Chain have decreased, but more recently are increasing.
- Margins have been squeezed significantly.
- Drilling rates have been reduced, but now stabilised and increasing slightly.
- Key players in the market have left the market.
- Key Construction Supply Chain have liquidated.
- Key players have diversified – PV and Wind to take advantage of FIT.
- Payment terms increased (but not honoured).
- Performance Bonds (at least quotes for) and Parent Company Guarantees.

3. Construction Supply Chain

Commercial Sectors

- Consultants and specifiers have a much greater understanding of the technology and applications – more needed though.
- Heating and cooling!
- Large scale projects (>500kW + 1MW) becoming more commonplace.

The 'Battle Ground'

- Most commercial work is undertaken in the CSC.
- Works completed either direct for Main Contractors or M&E subcontractors.
- Main Contractors were the last to go into the (1st) recession and will be last out (of the 2nd recession).
- Value engineering = only CAPEX focussed.
- Most, but not all clients are focussed on getting their development through planning, not OPEX considerations.
- Very aggressive and contractual – but not always.

4. 'Softer' Sectors

New areas of Business Growth

- Innovation
- Service, maintenance and RHI metering contracts
- 'Energy Farming' - Agriculture (grain drying/cooling, dairy, pig, poultry, high end domestic)
- Churches
- Sports facilities
- Care Homes
- Expert witness, independent witness/assessor and litigation (increased over 600% in last year)

Most of these are outside the CSC.

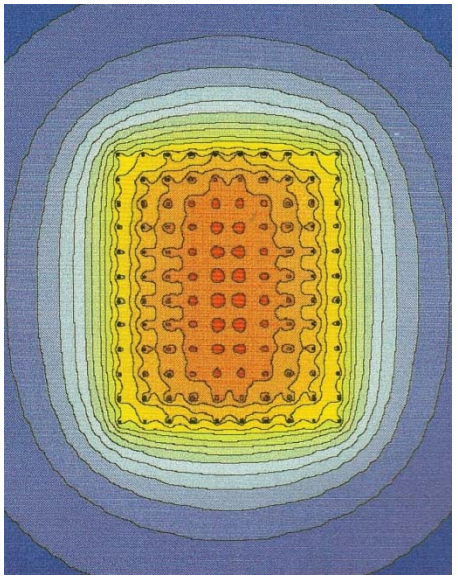
5. Required Approach

We must (continue to):

- ❑ Innovate and promote the use of GSHPs (not just for heating).
- ❑ Not automatically assume our technology is superior. We must demonstrate and prove in each case.
- ❑ Shed the perception that we are a 'black art'.
- ❑ Monitor and prove design performance vs actual performance (system viability, performance, payback – prove CoPs, EERs, SPFs and SEERs).
- ❑ Understand individuals understanding, expectations and clearly explain limitations and risk (installation risk, funding risks, system limitations).
- ❑ Advise responsibly (peak lopping, increasing base loads, balancing heating and cooling, realistic performance parameters, parasitic loads).
- ❑ Promote good practice – industry responsibility.
- ❑ Although a bonus - Do not rely on the RHI to grow and develop your business.

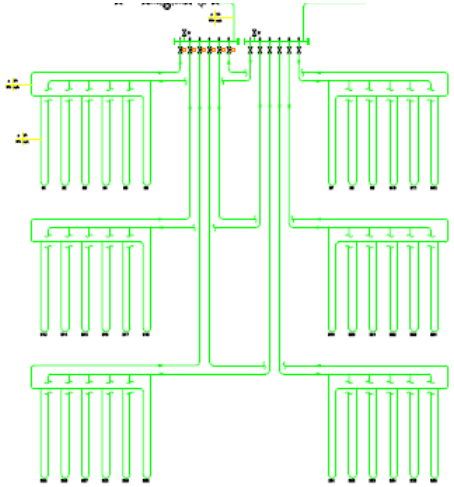
6. Differentiation & Innovation

- Deep closed loop geothermal probes up to 800m (improve the source to achieve greater efficiency).
- Modulating ground Energy Collectors.
- Ground Radial Drilling.
- Improving performance, project delivery, risk identification and reduction, demonstration.
- Impartial guidance on technology selection.



Source: G Helstrom

Source: Rehau 2011



7. Why Invest? Future prospects

- 6.8 million heat pumps by 2030 – Ecuity Consulting – realistic? (includes ASHPs).
- "heat pumps are expected to become the key delivery mechanism for demand side decarbonisation".
- Financial incentives – RHI, Green Deal - potential but do not rely on these as the only basis of your business.
- Superior technology but still has significantly more applications.
- Address current SAP.
- Industry needs to make more of Phase 1 RHI.
- Need to develop mindset and regulation beyond subsidies. Push for long term legislation as the driver not subsidies.
- If pulled together, opportunity for free standing large scale business is very possible. Myriad heat pump business has grown 70-100% year on year since 2009 and is projected to grow over 100% in 2012/2013.
- Margins need to improve.