GSHPA Summer Conference
July 10th 2014

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Thoughts on the Renewable Heat Incentive

Contents

GSHP association

History: Non-Domestic RHI

- November 2011:
  Scheme launched based upon tariffs originally published in March 2011.
  GSHP tariffs - 4.3p per kWh for installations up to 100kW
  3.0p per kWh for installations over 100kW
  GSHPA immediately voiced its concern that these tariffs were FAR too low.
  DECC claimed that an 'expert panel' had reviewed and approved the source data that had been used in the tariff calculation.
- May 2012:
  Early evidence that the market was hugely favouring biomass.
- Summer 2012:
  Sweetts performed a study to establish latest costs of renewable technologies.
- Early 2013:
  DECC indicated that there would be a substantial increase in GSHP tariffs.

History: Non-Domestic RHI

- May 2014:
  New non-domestic RHI GSHP tariffs finally published.

GSHP RHI Tariffs per kWh	Mar-11	Mar-14
Installed capacity up to 100kW	4.3p	8.7p for first 1314 hours at full load capacity 2.6p for additional hours Equates to 7.175p for typical 20% load factor installation
Installed capacity above 100kW	3.0p	

History: Domestic RHI

- **February 2010**: Consultation published (under previous Labour Government)
- Headline tariffs:

  GSHP 7p per kWh for 23 years on deemed heat consumption

  ASHP 7.5p per kWh for 18 years on deemed heat consumption

Worked Example: 75m 3-bed semi-detached social house – retrofit

				2010 Proposal			
Space Heating (kWh/yr)	**Domestic Hot Water (kWh/yr)**	**Total Heat Consumption (kWh/yr)**	**Tariff**	**Year of Payment**	**Total Payment (*)**	**Installed Cost**	**Installed Cost (net of counterfactual)**
9000	1425	10425	£0.07	23	£16,784	£14,000	£10,500
9000	1425	10425	£0.075	18	£14,074	£7,500	£4,000

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History: Domestic RHI

- March 2014: Policy Launch
- Headline tariffs:

  GSHP 18.8p per kWh for 7 years on renewable portion of deemed heat consumption

  HMT required GSHP to be 'capped' at the subsidy cost of offshore wind

  ASHP 7.3p per kWh for 7 years on renewable portion of deemed heat consumption

Flow Temperature	GSHP SPF (%)	Number of Renewable Hours	ASHP SPF (%)	Number of Renewable Hours
35	430	8001	360	7529
40	410	7882	340	7359
45	370	7607	300	6950
50	340	7359	270	6564
55	310	7062	Not eligible for RHI.	
60	280	6702		

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History: Domestic RHI

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							2014 Policy			
Space Heating (kWh/yr)	Domestic Hot Water (kWh/yr)	Total Heat Consumption (kWh/yr)	Flow Temp	SPF	Number of hours deemed renewable (kWh/Yr)	Tariff	Year of Payment	Total Payment (*)	Installed Cost	Installed Cost (net of counterfactual)
9000	1425	10425	50	340%	7359	£0.188	7	£13,719	£14,000	£10,500
9000	1425	10425	50	270%	6564	£0.073	7	£5,327	£7,500	£4,000

(*) Excludes impact of tariff increases due to change in RPI.

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Current Position: Non-Domestic RHI

- Corrected GSHP tariffs could reverse huge swing towards biomass triggered by poor RHI policy.
  - Latest statistics show that biomass is taking an ever-increasing proportion of the non-domestic RHI spend.

Non-domestic RHI Deployment Data May 2014: Table 1.3

Heat generated and number of accreditations by technology type

Technology	Heat generated and paid for under the scheme	
	MWh	% of overall total
Small biomass boiler (<200 kW)	418,388	33.2%
Medium biomass boiler (200-1000 kW)	492,076	39.0%
Large biomass boiler (>1000 kW)	291,992	23.1%
Solar thermal (<200 kW)	540	0.0%
Small water or ground source heat pumps (< 100 kW)	6,859	0.5%
Large water or ground source heat pumps (>100 kW)	4,244	0.3%
Total	**1,214,099**	

Source: DECC / Ofgem

Current Position: Domestic RHI

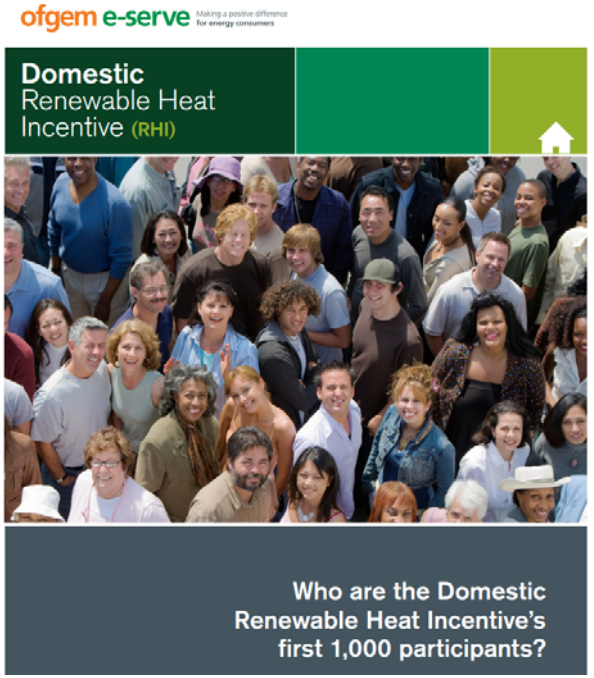
- Domestic RHI launched without much fanfare.
- Early press reports critical of policy uptake (although probably unfair due to staging of legacy applications and gestation period for any renewable heat installation).

theguardian

Josephine Moulds
theguardian.com, Monday 30 June 2014 15.21 BST

UK's pioneering low-carbon heating scheme helps just 79 households

Fears that renewable heat incentive hailed as 'first of its kind in the world' will repeat slow take-up of green deal scheme



- Supply chain finally has a message which it can take to market.

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Current Position: Opportunities

- Decision to offer a fixed tariff (per technology) regardless of installation size means that the rate of return is more lucrative on larger properties, particularly those blessed with water or sufficient land to accommodate trench-based ground arrays.
- Deeming the energy consumption based upon the Energy Performance Certificate's projection means these properties receive a tariff payment for each and every kilowatt hour (deemed to be renewable) even if the householder only uses a portion of the property.
- Deeming is permitted whenever the heat pump installation can handle the property's entire heating system load, per the MCS requirements. Any need to install a bivalent system obliges the use of meters to determine the RHI payment.
- Fully-funded models via third party ownership not currently permitted under domestic RHI but finance sector will likely offer loans with the RHI income being used to meet the loan repayment.
- Rates of return are guaranteed and appealing for householders owning large properties.

Current Position: Opportunities

Property Size (m2)	Peak Heat Load (kW)	EPC Heat Consumption	Renewable Heat (at 50C flow)	Tariff	Annual RHI Payment	Annual Running Cost Saving	GSHP Installed Cost	Counter -factual cost	Net Cost	Total RHI Income	Total Running Cost Saving	Internal Rate of Return (*)
280	23.8	47,858	33,782	£0.188	£6,351	£879	£34,000	£5,000	£29,000	£41,744	£6,156	17.68%
280	23.8	47,858	33,782	£0.188	£6,351	£879	£34,000	£0	£34,000	£41,744	£6,156	12.48%

Assumptions	
Cost of Oil (p per litre)	57.5
kWh per litre	10.4
Boiler Effiency	0.8
Cost per kWh (p)	6.91
Cost of Electricity (p per kWh)	15.22
Efficiency of heat pump	3
Cost per kWh (p)	5.07
Saving per kWh (p)	1.84

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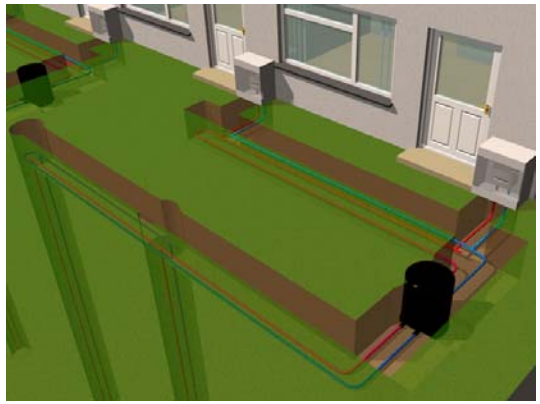
Current Position: Opportunities

- More challenging to generate interest in typical 3 or 4 bed houses, not least because the price of heating oil has fallen over the past three years and more of these properties will require more expensive borehole-based arrays.
- Opportunities within social housing are more likely to be focussed on district heating systems which can attract both ECO grants and the 20 year (and more lucrative) non-domestic RHI.
- GSHPs can be used in conjunction with an innovative system architecture to meet the district heating system definition.



Kensa Heat Pumps
A KENSA GROUP COMPANY

Future: Policy Refinements

- GSHPA supports deeming for all residential properties supported by either strand of the RHI.
  - Right now, social landlords are reluctant to invest in district heating systems because the RHI income is uncertain. As a consequence, the tenants in fuel poverty cannot benefit from the policy.
- Deeming in the domestic RHI would be preferable via Look Up Tables so householders who conserve energy do not see a reduced RHI income. Currently, the loss of RHI income greatly exceeds the potential capital cost and running cost savings.
- GSHPA supports the ultimate use of metering on all installations supported by the RHI once the policy has re-invigorated the market, triggered some growth and created some compelling case studies to maintain demand.
- GSHPA is still working with DECC to create a solution for GSHP systems which both heat and cool.
- RHI tariffs need to float based upon the price of the counter-factual fuel (oil). If the price of oil falls, the tariff must rise (to provide the same rate-of-return).
  - DECC believes the price of oil will rise which means tariffs can fall, increasing the policy's so-called 'value for money'.

Future : The RHI - a long-term policy?

- Designed to ensure 2000 RE target is met: does not mean policy must remain until 2020. Will it continue to exist post 2015 election?
- Funding commitment – runs to 2015/16 only.
- Coalition seemingly split.
- Conservative party certainly split on the appeal of renewables.

The Telegraph

David Cameron: man-made climate change is one of the 'greatest' threats to UK

By Peter Dominiczak, Assistant Political Editor
1:09PM GMT 26 Feb 2014

The Prime Minister says that man-made climate change poses one of the 'greatest risks' to the UK and the rest of the world but risks a split with his own Cabinet and Tory MPs

The Telegraph

Nick Clegg admits coalition split over green energy levies

10:47AM BST 24 Oct 2013

Stripping green levies from energy bills would be an "own goal" which could cost jobs and reduce support for poor households, Nick Clegg warns in the latest sign of division within the Coalition

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Future : The RHI - a long-term policy?

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Chris Huhne says there is no political consensus on tackling climate change

Chris Huhne, July 4th 2014

In 2010 there was *"a sort of uncanny consensus across all three main parties about the need to tackle climate change and 'go green. These days, a lot more politicians are trying to appeal to different audiences, including people worried about their household energy bills, and the effect of wind turbines on the landscape."*

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Future : The immediate challenge

- The GSHP industry must ensure all stakeholders recognise the unique characteristics of the technology.
- Unobtrusive – your neighbour will not know you have a GSHP installed.
- Highly efficient – provides the lowest running costs.
- Durable – the ground array infrastructure will last up to 100 years, entirely worthy of public subsidy.
- Versatile – the technology can support heating and cooling.
- Future-proofed - allows for significant load-shifting which means highly acceptable to other stakeholders
- Installations can be a significant contributor to the continued recovery of UK Plc.

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Future : The immediate challenge

Mail Online

By STEPHEN WRIGHT

PUBLISHED: 00:38, 21 September 2013 | **UPDATED:** 15:57, 21 September 2013

Fury as millionaire Tory MP who opposed green energy wants huge solar farm on his sprawling estate

itv

by Martin Dowse - last updated Fri 19 Oct 2012

Couple ordered to remove 'ugly' solar panels on cottage

BBC NEWS

7 July 2014 Last updated at 15:07

Wind turbine 'noise' to be investigated at Ysgellog Farm, Rhosgoch

Success stories

2013 H+V News winner: Renewable Project of the Year: Kensa Heat Pumps and New Linx Housing Trust

Sponsored by remeha commercial

Renewable Project of the Year

Winner Kensa Engineering – Brackenborough Road

Highly Commended

▸ Viessmann – Mill House

A submersible river heat exchanger was included in the installation of a water-source heat pump at this 19th century property, which has a nearby stream. The Viessmann Vitocal 300-G heat pump is supported by an LPG boiler and immersion heater.

Finalists

▸ AP Chant Plumbing & Heating – Centre of Renewable Energy

The CORE facility in Bridport showcases renewable energy forms in a fully operational, interactive environment, with expert advice included.

▸ AP Chant Plumbing & Heating – The Barn House

The Grade II-listed refurbishment project included the installation of a Vaillant 32 kW ground-source heat pump, solar thermal and PV systems.

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Success stories

- 2014 H + V News winner: Renewable Project of the Year: Mitsubishi scheme at Kingston upon Thames using water from the river.

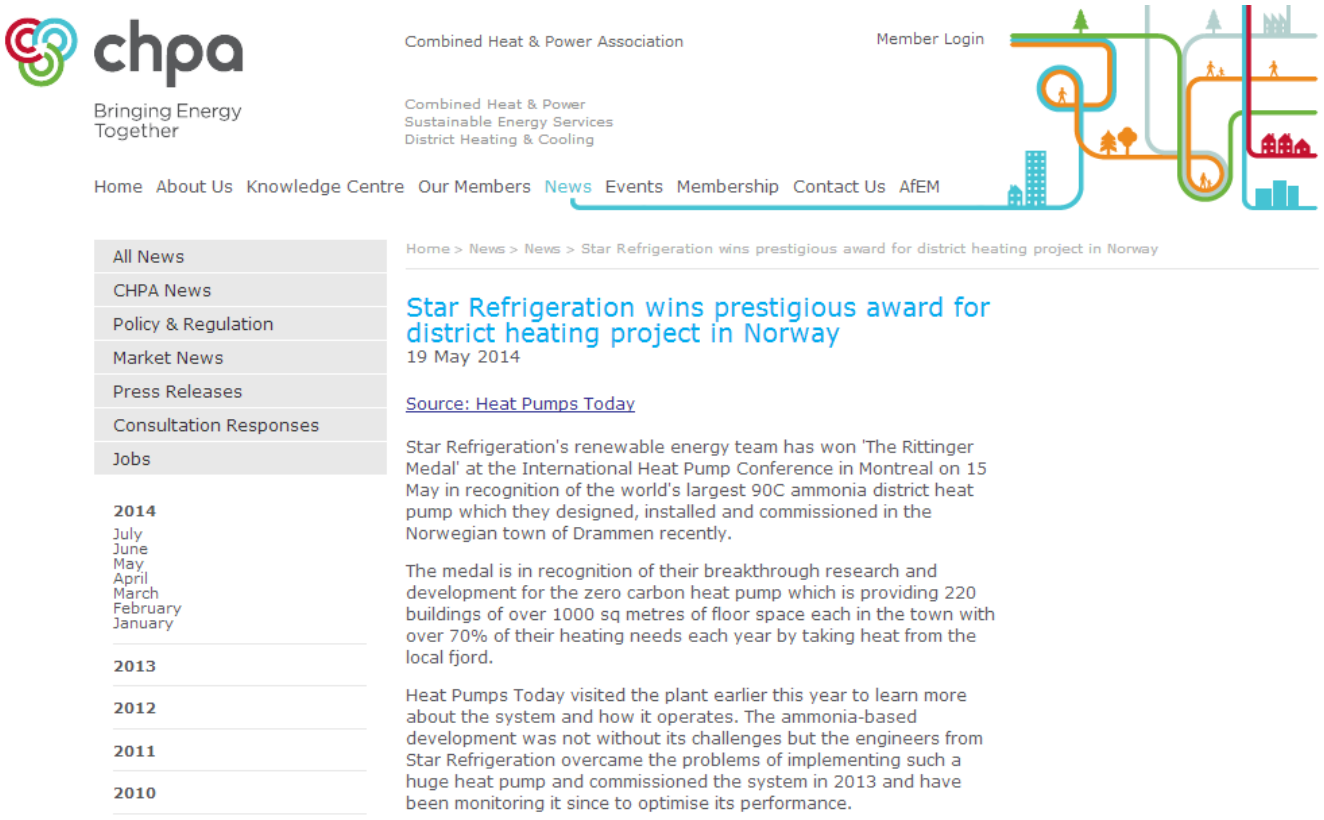
GAME CHANGING THAMES-HEATED DEVELOPMENT WINS FURTHER ACCLAIM

MITSUBISHI ELECTRIC
Changes for the Better

UNITED KINGDOM

Success stories

- International Heat Pump Conference winner: Star Refrigeration project at Drammen



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Bringing Energy Together

Combined Heat & Power Association

Combined Heat & Power
Sustainable Energy Services
District Heating & Cooling

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Home > News > News > Star Refrigeration wins prestigious award for district heating project in Norway

Star Refrigeration wins prestigious award for district heating project in Norway

19 May 2014

Source: Heat Pumps Today

Star Refrigeration's renewable energy team has won 'The Rittinger Medal' at the International Heat Pump Conference in Montreal on 15 May in recognition of the world's largest 90C ammonia district heat pump which they designed, installed and commissioned in the Norwegian town of Drammen recently.

The medal is in recognition of their breakthrough research and development for the zero carbon heat pump which is providing 220 buildings of over 1000 sq metres of floor space each in the town with over 70% of their heating needs each year by taking heat from the local fjord.

Heat Pumps Today visited the plant earlier this year to learn more about the system and how it operates. The ammonia-based development was not without its challenges but the engineers from Star Refrigeration overcame the problems of implementing such a huge heat pump and commissioned the system in 2013 and have been monitoring it since to optimise its performance.

Call to Action

- GSHPA again requesting that DECC provide a small budget (£50 - £100k) to allow the Association and others to publicise the appeal of the technology to the consultant community and beyond to help re-dress the market imbalance caused by incorrect non-domestic RHI tariffs.
- GSHPA requests a meeting with the Secretary of State to highlight the role of the technology in the nation's emerging Heat Strategy.
- Each GSHPA member and supporter of the technology must take every opportunity to promote the technology and explain why it is different and better than every other renewable.
  - The GSHPA will produce a Briefing Paper which can be used to make the point.
- Everybody takes full advantage of the select opportunities provided by the RHI and does all that is possible to garner political support for the technology.