



## Geothermal energy could heat entire UK

Researchers from BritGeothermal today claimed that a low carbon, sustainable source of energy has the potential to meet the entire UK heat demand, with the possibility for some power generation. Today they shared updates on their latest work at the British Science Festival.

BritGeothermal is an exciting new research partnership between the Universities of Durham, Glasgow and Newcastle and the British Geological Survey. This partnership aims to research and promote the potential of deep geothermal energy as part of the future energy mix for the UK. Dr Charlotte Adams, speaking at the British Science Festival said "Geothermal energy offers huge potential for our future energy demand in this country. This new, collaborative project will hopefully bring us closer to realising the potential, and enable us to promote the value of this resource in new and exciting ways".

Although geothermal energy plants are common in areas of the world with volcanic activity, such as Iceland and New Zealand, geothermal energy is a largely untapped resource in the UK. The UK does have one geothermal heating scheme at Southampton which has been operating for the past 25 years.

Despite our lack of volcanic activity, the UK still has a substantial geothermal resource albeit at lower temperatures ( $>100^{\circ}\text{C}$ ). The UK's geothermal gradient, is the rate at which the Earth's temperature increases with depth and has an average value of  $26^{\circ}\text{C}$  per km. It is possible to drill wells to abstract water (groundwater) from geological formations at depths of 1km or more, to extract heat for industrial and domestic space heating.

BritGeothermal is actively involved in research at the deepest geothermal well drilled in nearly 30 years. The Science Central borehole, in the centre of Newcastle extends to 1800 m, and intersects 377 m of the Carboniferous Fell Sandstone Formation. Initial temperatures of  $73^{\circ}\text{C}$  were recorded in this borehole, suggesting that there is a geothermal gradient of  $36^{\circ}\text{C}$  per km, which is well above the UK average. Research is continuing on the potential yield of this reservoir and the origins of the geothermal waters.

BritGeothermal is also investigating other geological settings including an assessment of the potential of several onshore sedimentary basins at depths of around 2km or more. These geological settings are a proven resource having been exploited at

Southampton. Also BritGeothermal are undertaking research to determine whether power plant technology can be optimised to make it more suitable for lower temperature waters. This has value offshore in oilfields where the production waters from oil wells could be used to meet some of the power demand of the rig. This technology could also be used onshore to provide heat and some power from geothermal wells. Dr Adams said, "lowering the temperature at which power can be produced could help to improve the economic case for deep geothermal energy in the UK."