

# UK – An Integrated Energy Scheme using Geothermal Energy in Southampton



## General

**Description:** In the Wessex basin, Largest commercially developed CHP/district energy scheme in the UK, Started 28 years ago (1986), Built on Joint Co-Operation Agreement with Southampton City Council

**Contact:** Cofely (GDF suez) and Southampton city council

## Project

<p><b>Inhabitants connected</b></p>	<p>Consumers include: Civic Centre, 5 Hotels Royal South Hampshire Hospital Offices Complexes Southampton Solent University Olympic Size Swimming &amp; Diving Complex Entire 53 Acre West Quay Shopping Centre Public and Private Sector Housing ..... and many more</p>	<p><b>Production of heating and/or cooling</b></p>	<p>Supplying heating, cooling and electricity</p>
<p><b>Others uses (drinking water, cascade uses...)</b></p>	<p>Part of water cooled in heat exchangers sold to recreation centre (swimming pools, space and tap water heating), second recreation centre based on cooled geothermal water expected to be opened in 2014</p>	<p><b>Comparison with fossil energies</b></p>	<ul style="list-style-type: none"> <li>•£0.6M p.a. cost savings to consumers.</li> <li>•12,000 tons of CO2 emissions saved p.a.</li> </ul>

## Financing

<p><b>Financing (Bank, funds, PPP...)</b></p>	<p>£5M Energy Sales</p>		
<p><b>Cost of the MWh sold</b></p>	<p>Project built on 20 year energy supply contracts</p>	<p><b>Investment for geothermal heating station</b></p>	<p>Capital cost to date £13M</p>

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## Technical

<p><b>Installed capacity (MWth)</b></p>	<p>7 MW of CHP, 2MW geothermal well, and 1 MW biomass in 2014</p>	<p><b>Temperature of the geothermal resource (production - injection)</b></p>	<p>122°C water in a limestone layer lying at a depth of 3,446 m</p>
<p><b>Installed geothermal capacity</b></p>	<p>2MW geothermal well</p>	<p><b>Innovation</b></p>	<p>Commercial arrangements: Works through a Joint Co-operation Agreement between City Council and Cofely. The City Council commits to facilitate success of scheme by:</p> <ul style="list-style-type: none"> <li>•Taking heat where practicable</li> <li>•Promoting scheme to potential users</li> <li>•Supporting development of network</li> <li>•Provision of land for heat station</li> <li>•Treating Cofely as a statutory utility within city</li> </ul> <p>Future proofing: New technologies being actively considered:-</p> <ul style="list-style-type: none"> <li>•Biomass – woodchip</li> <li>•Energy from Waste</li> <li>•Anaerobic Digestion</li> <li>•Fuel Cells ...and several others</li> </ul>
<p><b>Operating temperature of the DH</b></p>	<p>Piping heating &amp; potentially cooling to buildings – “Energy Linking” Heat Losses - 1°C per km Reliability ~ 100% (99.98% for Southampton)</p>	<p><b>DH Length</b></p>	<p>14 km pipe network</p>

