



On-Site Energy Systems



Course Description:

Ground Source Heat Pumps (GSHP) are a rapidly advancing low-carbon heating and cooling technology which can be used as an economical alternative to standard heating & cooling solutions...

This presentation will provide an overview of commercial-scale GSHP systems for buildings using energy foundations and other solutions, and most importantly how GSHP systems can be integrated into other renewable solutions to provide enhanced energy savings and deliver net zero building. Topics will include practical design, build and long-term management considerations along with cost estimating criteria and how projects can be funded.



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Most of my 35 years working in the construction industry, has been managing large foundation projects in the UK, Hong Kong, and Singapore. For the past 15 years, I have been raising the profile and opportunities associated with ground sourced heat pumps, especially using energy piles, while at the same time building my own house and incorporating a GSHP for heating and hot water powered by PV. I initiated the trial at Lambeth College in 2007 with Cambridge University, to answer the many questions from sceptics about impacts on foundation performance and provide clear guidance regarding the effect of heating and cooling on foundation piles. I was a key author for the UK's GSHPA Thermal Pile Design, Installation & Materials Standard. I am Chairman of the DFI's Energy Foundation Committee. To date GI Energy have installed geothermal loops into energy piles on almost 60 projects, ranging from many commercial offices, Schools, Universities, to Central London Network Rail and Crossrail stations and depots. A key player within the GI energy organization, I am currently involved with one of the largest energy pile projects in the world being installed in California, and importantly raising the profile of integrated renewable energy solutions in the USA & UK.

I have authored / been coauthor on over 15 industry publications Related to Energy Foundation solutions

Papers - Authored and Co Authored

- Energy Geostructures: Analysis from research and systems installed around the World

Alice Di Donna, Marco Barla and Tony Amis

Paper DFI 2017

- Article: Hybrid solution for Old Oak Common Crossrail Depot - Innovative design reduces energy consumption and carbon footprint

Tony Amis · Mike Beagle

Article · Sep 2016

- Chapter: Long term monitoring of CFA energy pile schemes in the UK

F Loveridge · W Powrie · T Amis · J Kiauk

Chapter · Aug 2016

- Article: Identifying best practice, installation, laboratory testing and field testing

T. Amis · J.S. McCartney · F. Loveridge · K. Murphy

Article · Oct 2014

- Article: Therm Foundations

T. Amis · F. Loveridge

Article · Aug 2014

- Article: Energy piles and other thermal foundations, developments in UK practice and research

T. Amis · F. Loveridge

Article · Jan 2014

- Thermal Pile Design, Installation & Materials Standards

Duncan Nicholson, Tony Amis, Peter Smith, Fleur Loveridge document written as a guide for the UK's Ground Sourced Heat Pump Association (Can be downloaded free from www.gshp.org.uk/shop.html)

Oct 2012 Updated October 2017

- Article: Thermo-mechanical behaviour of energy piles

B. L. Amatya · K. Soga · P. J. Bourne-Webb · Tony Amis · L. Laloui

Article · Jun 2012 · Géotechnique

- Article: Understanding the behaviour of energy geo-structures Discussion

Peter Bourne-Webb · Kenichi Soga · Tony Amis · Alice Di Donna

Article · May 2012 · Civil Engineering

- Article: Thermo-mechanical Behaviour of Energy Piles

Amatya Binod · Soga Kenichi · Bourne-Webb Peter J. · Tony Amis · Lyesse Laloui

Article · Jan 2012

- Working Paper: Integrating Geothermal Loops into The Diaphragm Walls of The Bulgari Hotel Knightsbridge London

Tony Amis · Christopher A. W. Robinson · Samuel Wong

Working Paper · Sep 2011

- Conference Paper: Thermal Conductivity Evaluation of a Pile Group Using Geothermal Energy Piles

Tracy Brettmann · Tony Amis

DFI Conference Paper · Mar 2011

- Article: Geothermal business buoyant

Tony Amis · P.B. Webb · B. Amatya

Article · Mar 2009

- Article: Energy pile test at Lambeth College, London: geotechnical and thermodynamic aspects of pile response to heat cycles

Peter Bourne-Webb · Binod Amatya · Kenichi Soga · Tony Amis · Peter Payne

Article · Jan 2009 · Géotechnique

- Conference Paper: The effects of heating and cooling energy piles under working load at Lambeth College, UK

Tony Amis · Peter Bourne-Webb · Chris Davidson · Kenichi Soga

DFI Conference Paper · Oct 2008

- Poster: Effect of Heating & Cooling of Energy Piles Under load

T. Amis · Peter Bourne-Webb · Chris Davidson · [...] · Kenichi Soga

Full-text Poster · DFI Conference New York Sep 2008

- Jointly presented an Energy Pile paper to Department of Trade and Industry as part of Partners in Innovation 2005 with Arup and Newcastle University



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