

Geothermal Drilling Certification



**Friday 16th September 2011
The Geological Society
Burlington House; Piccadilly; LONDON; W1J 0BG**

**Brian Stringer
BDA National Secretary**



GEOHERMAL DRILLING CERTIFICATION

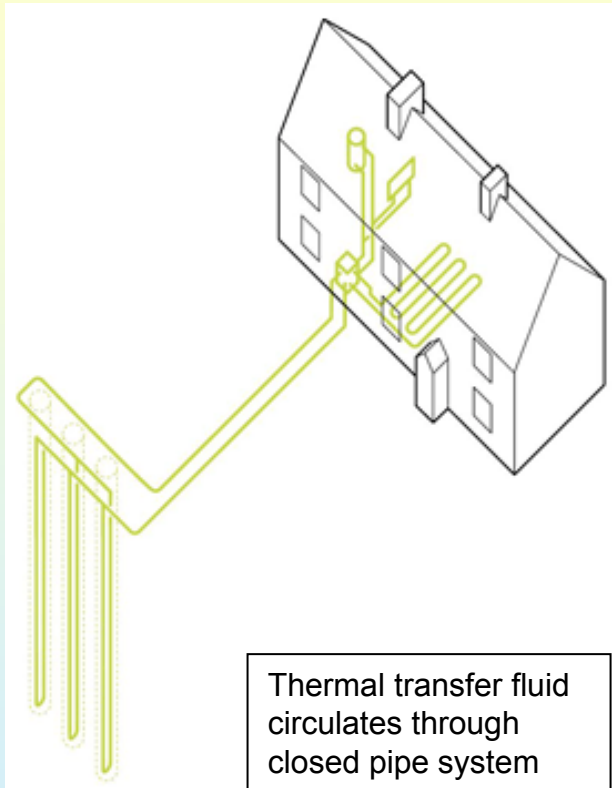
- **WHAT WILL CERTIFICATION ACHIEVE?**
- **WHY CERTIFICATION?**
- **WHAT ARE THE DRIVERS?**
- **WHAT'S THE PROGRESS ON CERTIFICATION?**
- **WHO WILL IT COVER?**
- **WHAT WILL BE THE PROCESS?**

WHAT IS GEOTHERMAL DRILLING?

- Geothermal Drilling is a specialist activity to install geothermal **closed loops** into the ground or construct water wells/boreholes for extraction/discharge of ground water (**open loops**) as part of installation of a Ground Source Heat Pump system.
- Geothermal Drilling is considered as the drilling and installation of heat exchanger to depths of up to 400m and **termed elsewhere as shallow geothermal drilling.**

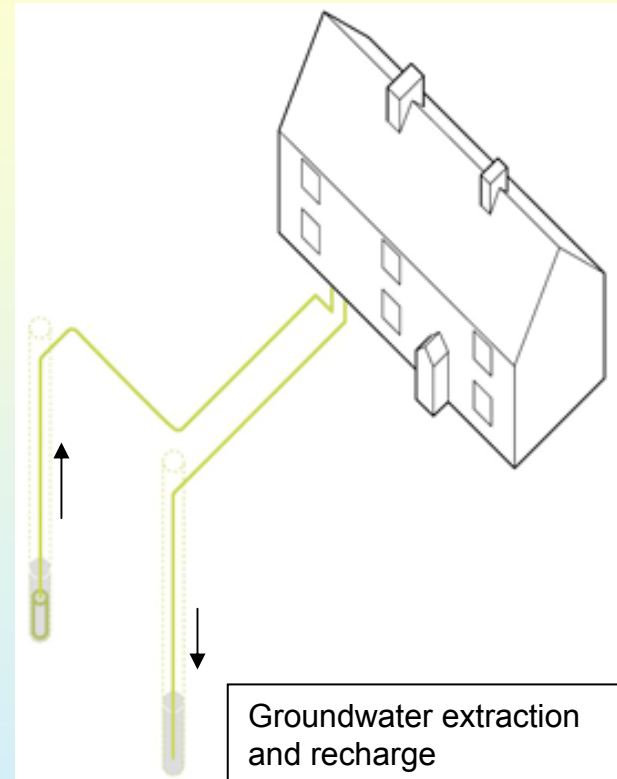


WHAT IS GEOTHERMAL DRILLING?



Closed vertical loop (also inclined, radial)

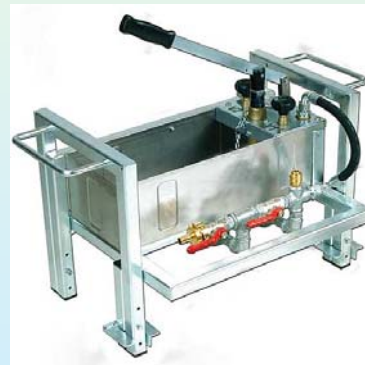
The ideal choice when available land surface is limited. Drilling equipment is used to bore small-diameter holes (150mm) from generally 50m to 150m deep.



Open loops

Open loop systems utilise ground water as a direct energy source. In ideal conditions, an open loop application can be the most economical type of geothermal system.

GEOHERMAL DRILLING PLANT



VARIETY OF RIGS, MUD MIXING UNITS,
HOSE REELS, PRESSURE TESTING
EQUIPMENT ETC.

WHAT WILL CERTIFICATION ACHIEVE?

- Increase in client confidence (happy customers)



- Quality ground heat exchanger installations



- Conformance to legislation, standards, codes of practice, industry guidance, benchmarks etc.



- Fair competition (level playing field)



WHAT WILL CERTIFICATION ACHIEVE?

- **Environmentally friendly drilling**



- **Greater safety**



- **Trained, qualified and competent workforce**



- **Exclusion of 'cowboys'**



WHY CERTIFICATION ?

- **Self-certification no longer acceptable**
- **Have been rogue jobs already e.g. pipe lengths not to specification; poor backfilling; artesian water flooding**
- **Entry level is too easy to achieve**
 - **buy a rig, employ a JCB driver = drilling contractor**
- **Pending legal actions for leaking GHEs**
- **GHEs have to be fit for 50 years (and still work after 2)**
- **Influx of inexperienced people will cause safety issues**
- **Reputation of drilling sector will take a hit**

WHAT ARE THE DRIVERS ?



- **GOVERNMENT**

- Wants quality GSHP installations
- No loss of customer confidence or market setback
- UK energy security is a major factor
- Electrical heating high on agenda
- MCS Certification required for pumps / installers
- Recognises that drilling is a weak link

- **INDUSTRY**

- Needs sustained growth
- Can't afford setbacks
- Needs supply of competent drilling contractors
- Trade Associations united for drilling certification

PROGRESS ON CERTIFICATION ?

- **MARCH 2011**

- BDA awarded £39,550 grant by 
- Develop Geothermal Drilling Sector Scheme (GD-SAS)
- Promote to sector

- **APRIL – JULY 2011**

- Sector Scheme Advisory Committee (SSAC) formed
- Chairman Professor Barry Clarke (Vice President ICE)
- Secretary Brian Stringer. Consultant John Grainger.
- Cross industry participation (clients, consultants, trade associations, contractors etc.)
- Met 4 times to work on scheme document

PROGRESS ON CERTIFICATION ?

- **AUGUST 2011**

- **Scheme document (SSD) approved by SSAC**
- **88 pages**

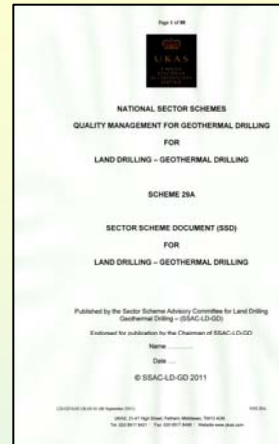
- **A considerable effort by all involved**

- **SEPTEMBER 2011**

- **SSD → UKAS (United Kingdom Accreditation Service) for its approval**

- **First regional seminar (London) 16th**

- **Second seminar (Solihull – Motorcycle Museum) 29th**



PROGRESS ON CERTIFICATION ?

- **OCTOBER 2011**
 - **UKAS approval (probably September)**
 - **Publication on UKAS website**
 - **Certification Bodies apply for accreditation (to audit and award certification)**
 - **3 more regional seminars (Manchester 13th, Glasgow, Newcastle)**
- **NOVEMBER 2011**
 - **Last seminar (Cardiff or Bristol)**
- **LATE 2011 – EARLY 2012**
 - **First audits carried out and certificates awarded**



WHO WILL IT COVER ?

ORGANIZATIONS OFFERING FOLLOWING SERVICES

CATEGORY	SUB CATEGORY	CODE
CLOSED LOOP (Drilling & Installation)	Up to 100m depth	GD/CLS/DIB
CLOSED LOOP (Drilling & Installation)	Greater than 100m depth	GD/CLD/DIB
PRESSURE & FLOW TESTING	Closed Loop	GD/CL/PFT
THERMAL RESPONSE TESTING	Closed Loop	GD/CL/TRT
HEADWORKS INSTALLATION	Closed Loop	GD/CL/H
OPEN LOOP (Drilling & Installation)	Any Depth	GD/OL/DIB
ACIDISATION	Open Loop	GD/OL/AC
PUMPING TEST	Open Loop	GD/OL/PT
HEADWORKS INSTALLATION	Open Loop	GD/OL/H

WHAT WILL BE THE PROCESS ?

- **UKAS SECTOR SCHEMES**

- Are not new
- Some 25 schemes are in existence
- Mainly in highways sector (Highways Agency)
- Are bespoke quality management schemes
- BS 9001 with real relevance (not uninformed paper chase)
- Refer directly to specific requirements of the sector
- Conformity with sector standards, competencies etc.
- Geothermal Drilling will be scheme 29A



WHAT WILL BE THE PROCESS ?

- **BS 9001 Quality Management**
 - Builds on this
 - Organizations must have or obtain BS 9001
- **CERTIFICATION BODIES**
 - Apply to UKAS for accreditation
 - Must have auditors familiar with and knowledgeable about the sector
 - Audit according to scheme document requirements
- **ORGANIZATIONS**
 - Apply to an accredited certification body to be audited for one or more of the Geothermal Drilling categories

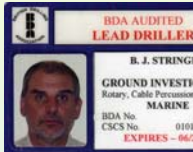
WHAT WILL BE THE PROCESS ?

SCHEME DOCUMENT REQUIREMENTS

- Detailed according to geothermal drilling category

SOME EXAMPLES

- Drilling operatives NVQ and BDA AUDIT qualified
- All staff suitably trained, experienced, qualified
- Welfare matches CDM requirements
- Plant & equipment is PUWER & LOLER inspected
- Closed loop installation conforms to GSHPA standards
- EA heating & cooling guidance is complied with
- Safety matches BDA Health & Safety CoP
- Documented completion reports
- Coal Authority permissions obtained



RELATIONSHIP TO MCS CERTIFICATION

- **MCS (MIS 3005)**
 - “Requirements for contractors undertaking the supply, design, installation, set to work, commissioning and handover of microgeneration heat pump **systems**”
 - **System Installation includes drilling / GHE installation**
 - “Any work ... not undertaken by employees of the contractor shall be managed through a formal subcontract agreement ... in accordance with policies and procedures employed by the certified contractor”
 - **Geothermal Drilling certification will be made a requirement for in-house / subcontracted drilling**

SUMMARY

- **A GSHP SYSTEM IS ONLY AS GOOD AS ITS WEAKEST LEAK**
- **CONTRACTOR / SUBCONTRACTOR CERTIFICATION REQUIRED FOR ALL PARTS OF SYSTEM**
- **GEOHERMAL DRILLING CERTIFICATION NEEDED**
- **IT'S LAUNCHED TODAY & AVAILABLE SHORTLY**

