



The Geothermal Association of Ireland
Ground Source Heat Pumps and Deep Geothermal Energy

GROUND SOURCE HEAT PUMPS TRAINING AND CERTIFICATION

FINAL REPORT

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1. INTRODUCTION

The Geothermal Association of Ireland (GAI) and its members have developed new course modules and materials for professionals involved in the design and installation of shallow geothermal and ground source heat pump technologies in Ireland.

This course targets all professionals responsible for design, specification, construction, installation and testing of ground source collectors. This course is designed to complement the training and certification given through the FETAC (QQI) Level 6 (C30263) course for installers by reaching out to those professionals and engineers responsible for design and construction of the collectors.

The overall objective of the initiative is facilitate the development of an accreditation scheme for professionals installing ground source collectors and improve the standards of installed systems. The development of a consistent standard of installation will allow consumer and customer confidence in the technology to grow by introducing best practice in installation.

The training course has been developed with the support of the SEAI RDD programme 2016. The original proposal to the open call for funding was submitted in March 2016. The project was subsequently funded in July of 2016.

This report outlines the project progress against the reduced timeline which was originally envisaged and introduces the material prepared to date.

2. THE EUROPEAN PERSPECTIVE

GeoTrainet began as an EU-funded project which ran from 2008-2011. A lack of appropriately skilled personnel and varying quality of installations had been identified as a barrier to the expansion of shallow geothermal energy use in Europe, so the GeoTrainet project was set up to develop an educational programme which could provide a benchmark standard for training in the sector.

The project was a success with the comprehensive programme developed by a broad range of experts from across Europe in high demand in the project countries.

The demand was so high that only a small proportion of the applicants could be accommodated in the courses organised during the project, so it was decided that the concept should continue as an organisation in its own right. On the 25th February, 2014 the association 'geo-education for a sustainable geothermal heating and cooling market', or 'GeoTrainet' for short, was officially established under Belgian law with nine founding members : EFG (Europe) –EGEC (Europe) – ANIG hp (Italy) -RGS (Romania) – BWP (Germany) – GEOPLAT (Spain) – SGC (Sweden) – APG (Portugal) – HHPA (Hungary).

The Geothermal Association of Ireland has joined GeoTrainet and is now an active members and national body.

GeoTrainet coordinates the work of the national bodies. The content and quality of the courses is also overseen at a national level by National Training Committees (NTC) and at a European level by the European Training Committee (ETC).

The GAI can now deliver a European wide training and certification programme for shallow geothermal installers, specifically designers and drillers.

The course material developed by GAI and its members has been developed with Irish ground and climatic conditions in mind.

3. STAKEHOLDER ENGAGEMENT

The success of a new training programme to cover the design, construction and completion of ground source collectors requires engagement with several professional disciplines. The project focussed on compiling stakeholder list of professional organisations that were where engineers, architects and relevant government agencies would have members with potential interest in the accreditation process.

The GAI has developed this based on its membership contacts, with an objective of targeting individuals responsible for CPD in professional organisations. A list of some of the key stakeholders contacted during the project is given in table 1 below.

IGI
Engineers Ireland: Geotechnical Society
ASHRAE Ireland
Heat Pump Association of Ireland
Architectural Association of Ireland
Royal Institute of the Architects of Ireland
EPA
GSNI

The following strategy was adopted as part of the consultation process:

1. Initial circulation correspondence outlining the initiative
2. Written contact and request for meeting with CPD officers
3. Follow call
4. Meeting Request

The consultation process is still on going. Many of the professional organisations have expressed interest in the course but more consultation on the CPD value for the individual organisation members and a more specific target audience is required.

GAI have had very successful consultation with ASHRAE Ireland. Based on initial consultation, ASHRAE Ireland has provided support to the development of the material provided. The GAI and ASHRAE are working on further strengthening this relationship in the hope that the courses may be recognised mutually by both parties.

GAI envisage continuing the promotion of the course through social media and presentation of the structure at national events where relevant professional stakeholders are attending. This will be further completed during Q4 of 2016 and Q1 of 2017.

4. TRAINING ROADMAP

A generic training roadmap has been developed as part of the project and presented to the relevant stakeholder organisations. The road map document is presented in appendix A.

Based on initial consultation with members and proposed structure for the courses as shown in figure 1 below was identified as being best suited to the Irish market.

The structure makes provision for training of different professionals involved in different aspects of project completion, but allows for compulsory modules to be delivered giving a general understanding to all involved parties of the considerations that are required in the development of different aspects of these systems.

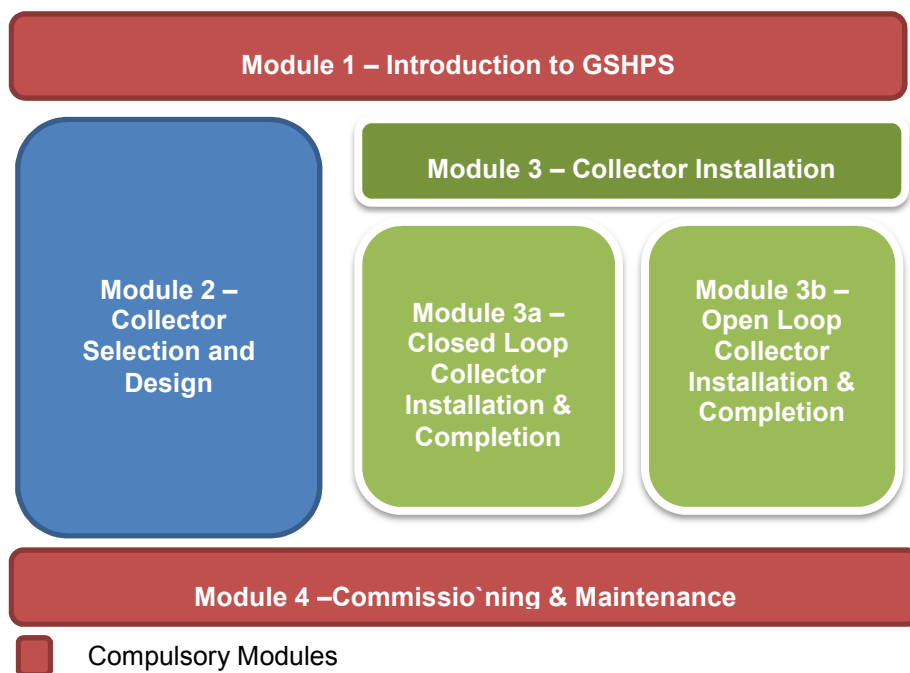


Figure 1. GAI Training Roadmap Structure

5. TRAINING MODULES AND MANUALS

The project team and GAI members have focused on developing a series of training module presentations and manuals.

A total of 5 Training Modules have been developed including:

- GAI Training Module 1 – Introduction (compulsory)
- GAI Training Module 2 – Design
- GAI Training Module 3a - Closed Loop Collector Installation
- GAI Training Module 3b - Open Loop
- GAI Training Module 4 - Commissioning and Maintenance (compulsory)

The modules presentations are complemented by three manual that include:

- GAI Training Manual 1 – Introduction & Site Assessment
- GAI Training Manual 2 - Drilling and Installing
- GAI Training Manual 3 -Commissioning & Maintenance

The Modules are intended to address the work of specific professionals with the introduction and commissioning and maintenance modules considered compulsory to all course attendees.

The delivery of the modules would be given separately given the potential different attendees and professionals. This can be achieved through completing parallel sessions by staggering the course delivery structure.

The manuals developed to support the training events contain detailed information based on the work carried through Geotrainet and a compilation of best practice documentation from other jurisdictions in the UK and other European regions where training and certification initiatives are already in place. The training manuals relevant to those attendees to the specific courses will be supplied based on the certification module chosen by attendees.

An online course delivery architecture to accommodate the modular course options has been developed as part of the project. An outline of the proposed structure is described in Appendix B. The structure outlined provides adequate flexibility for modification and change of the structure should the course material change in the long term. The implementation of the online course structure can be completed once the training material has been finalised.

6. PROBLEMS ENCOUNTERED

The late start of the project development process has resulted in some delays to the completion of some of the proposed tasks, some of these are still on going and are summarised below.

- The stakeholder consultation process was originally envisaged to be covered over a period of 3 to 6 months. The late commencement of the project during the summer period meant that little engagement was possible with specific CPD representatives. The process is currently on going but delayed from the original timeline.
- The training implementation strategy has been delayed as a result of delayed start of the project. A commencement of the proposed training initiative could be undertaken at the latest my beginning of Q2 of 2017.
- The reduced project implementation timeline has required that all resources were focused on the completion of presentations and manuals for delivery to SEAI. Whilst basic engagement has been undertaken with training providers to develop a detailed training schedule, only an outline training programme has been proposed in the roadmap document. Training is currently not envisaged to start until stakeholder consultations are complete and not before the end of Q1 of 2017.
- The training manuals developed cover most of the information required for expected target audience. Final consultation with association members and feedback to the authors is still outstanding. A final revision of the material will be required in advance of the commencement of the training programme.
- Further discussion with SEAI on the potential for recognition for the training courses has not been yet undertaken. This should follow in early 2017 to establish possibilities of endorsement to participants.

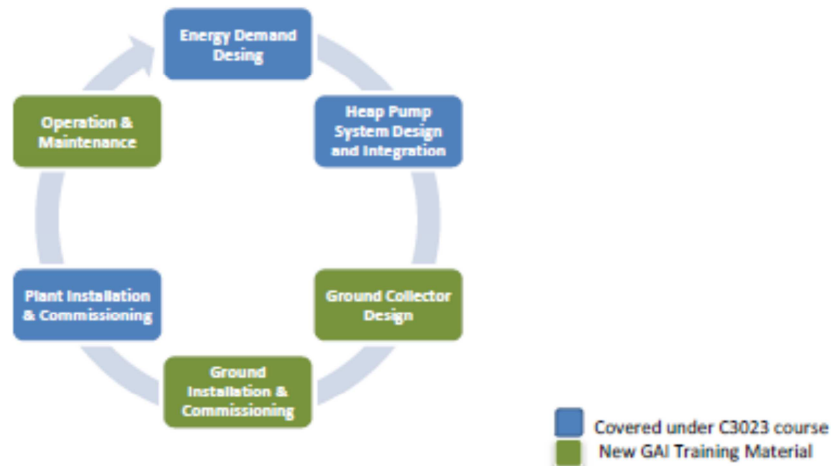
APPENDIX A – TRAINING ROADMAP



GAI Ground Source Training Programme

Introduction:

The Geothermal Association of Ireland has developed the GAI Ground Source Training Programme for professionals involved in the design and installation of shallow geothermal and ground source heat pump technologies in Ireland. This new course will target all professionals responsible for design, specification, construction, installation and testing of ground source collectors. This course adds to the training and certification given through the FETAC (QQJ) Level 6 (C30263) course for installers targeting professionals including engineers responsible for design and construction of the collectors.



Background to the Initiative

Professional training for ground source heat pumps installations in Ireland is focus only on the completion of the plant room to the distribution network elements of a GSHP system. The ground collector design and construction of these are always based on rules of thumbs with inadequate site assessment and design specification, leading to inefficient systems and higher operating costs.

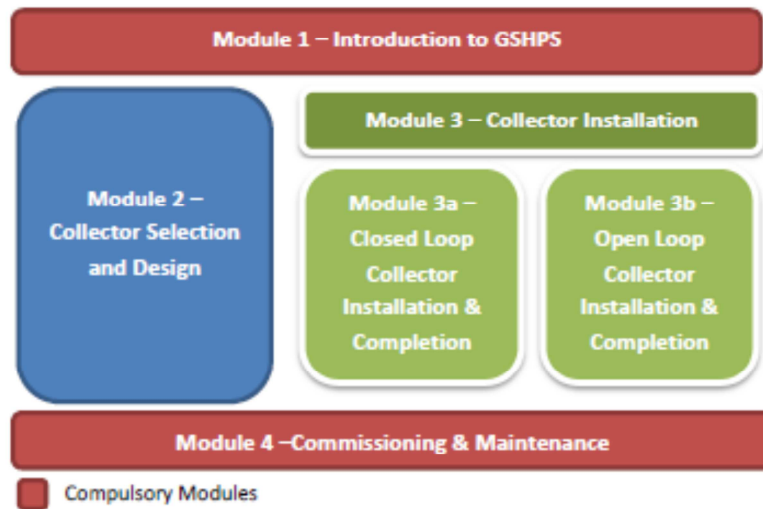
The GAI training scheme is delivered as part of a European Certification initiative known as Geotrainet that provides professionals with EU recognition of the training and certification given on GSHP collector aspects in Ireland. The scheme is recognised by the ASHRAE Ireland Chapter.

Course Module Structure

The course training consists of 4 main modules. The modules are designed with an objective to deliver to course attendees and introduction to the basics on ground source heat pump systems (module 1) and then providing specific technical content that covers system analysis, demand and design as part of module 2, the installation of closed loop vertical collector (module 3a) and open loop collectors (module 3b) with a final model to cover commissioning and operation of the system (module 4). The Course structure makes provision for 3 mandatory modules for professional certification, with modules 1 and 4 obligatory to all professionals.

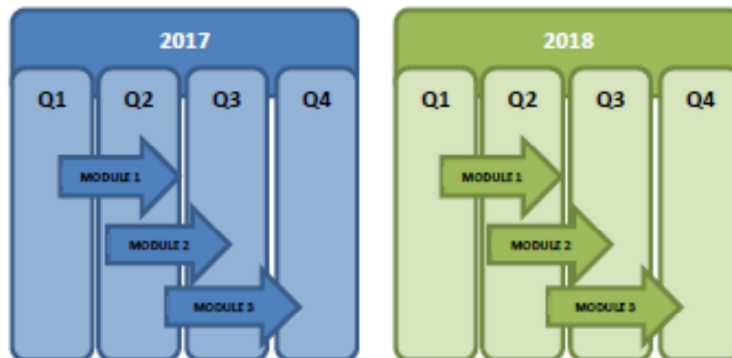


Modules 2 and 3 are at the discretion of the course attendees provided that suitable qualifications to attend these can be achieved.



Training Delivery Schedule

Training GAI Ground Source Programme will commence in 2017 with a planned schedule of one training module per annum. The course offers CPD credits to attendees of the professionals. Each course module will provide the attendees with detailed technical lectures, course manual and a short assessment.



Course Information

For more information please email info@geothermalassociation.ie or look for updates on www.geothermalassociation.ie

APPENDIX B – ONLINE COURSE ARCHITECTURE



Learning Centre Administration

9 Steps to Creating Groups and Assigning Courses

1. Log in to the Learning Centre at www.eazysafelc.com


If you are assigning a course to a number of users, the best way to do this is to group the users you want to assign it to.


2. Click on the **'Training'** tab.

-  **My Courses**
-  **Course Progress**
-  **My Profile**



-  **Users**

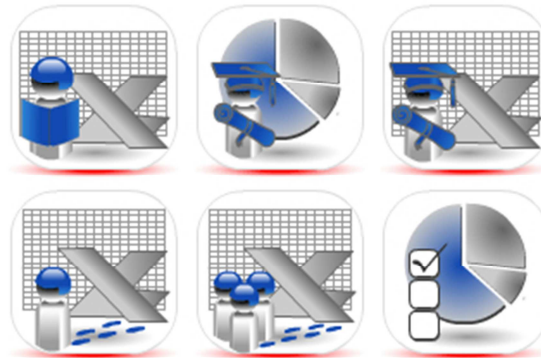
-  **Customers**

-  **Distributors**

-  **Franchise**

Manage Training

Use this menu for eLearning content administration

**Assignment Reports**

3. Click **'Create a new group'**, give the group a name.



4. Click on the **'Training'** tab again.

5. Click **'Add user to group'**.



6. Select the group and tick the users you would like to add to this group and click **'Add user to group'**.

7. Click on the **'Training'** tab again.

8. Click **'Assign Courses to a Group'**.



9. Choose your group and tick the course you would like to assign to them now, choose whether you would like to send an email or not, and then click '**Assign Selected Course**'.

EazySafe Learning Centre User: Niamh Lynam Logout Help

Assign courses to a group

To assign courses: Choose a group (The default group includes everyone). You can also reduce the group to only users at the particular location. Highlight the courses in the list. Then click the assign button below.

User group: Administration

Location: All

7 Users

Send email:

Course ID	Title
<input type="checkbox"/>	1 Bullying & Harassment (IE)
<input type="checkbox"/>	2 Bomb Safety
<input type="checkbox"/>	3 Chemical Safety (IE)
<input type="checkbox"/>	4 Drugs and Alcohol (IE)
<input type="checkbox"/>	5 Driver Safety (IE)
<input type="checkbox"/>	6 Employee Induction
<input type="checkbox"/>	7 Electrical Safety (IE)
<input type="checkbox"/>	8 First Aid Overview (IE)
<input type="checkbox"/>	9 Food Safety
<input type="checkbox"/>	10 Fire Safety
<input type="checkbox"/>	11 Introduction to Health & Safety (IE)
<input type="checkbox"/>	12 Manual Handling
<input type="checkbox"/>	13 Noise Safety
<input type="checkbox"/>	14 Risk Assessment
<input checked="" type="checkbox"/>	15 Slips Trips & Falls
<input type="checkbox"/>	16 Working at Heights