
APPLICATION PART A: POLICY

CERTIFICATION PROGRAM FOR CERTIFIED GEOTHERMAL DESIGNERS

(CGD®)

PRESENTED BY
ASSOCIATION OF ENERGY ENGINEERS

SPONSORED BY
THE INTERNATIONAL GROUND SOURCE
HEAT PUMP ASSOCIATION

AND

GEOTHERMAL HEAT PUMP CONSORTIUM DBA
GEOTHERMAL EXCHANGE ORGANIZATION

Information for Applicants

1. OBJECTIVES

- To raise the professional standards of those engaged in commercial geothermal heat pump design.
- To improve the practice of commercial geothermal heat pump design by encouraging design professionals in a continuing education program of professional development.
- To identify persons with acceptable knowledge of the principles and practices of commercial geothermal heat pump design related disciplines and laws governing and affecting geothermal heat pump design through completing an examination and fulfilling prescribed standards of performance and conduct.
- To award special recognition to those professionals who have demonstrated a high level of competence and ethical fitness for commercial geothermal heat pump design.

2. ELIGIBILITY

Professionals with one of the following prerequisite may apply:

A four-year Mechanical Engineering graduate and/or P.E. or R.A. with three years of verified experience in commercial geothermal heat pump system project design.

OR

Any other four-year technical or non-technical degree with five years of verified experience in commercial geothermal heat pump system project design.

OR

A two-year technical degree with eight years of verified experience in commercial geothermal heat pump system project design.

OR

Ten Years or more of verified experience in commercial geothermal heat pump system project design.

In addition to meeting one of the eligibility requirements mentioned above, the applicant must also submit a minimum of three projects related to the commercial geothermal industry. These projects must be completed; feasibility studies and projects not yet completed will not be accepted. Also, 2 of the 3 projects must be a minimum of 100 tons and the smallest size project accepted is 75 tons.

3. THE REQUIRED BODY OF KNOWLEDGE

The effective practice of commercial geothermal heat pump design requires in-depth knowledge of a wide variety of subjects. However, the candidate need only demonstrate to the satisfaction of the certification board the knowledge and ability to apply the essentials of commercial geothermal heat pump design.

4. TRAINING

In order to take the CGD exam, the candidate must attend an International Ground Source Heat Pump Association (IGSPHA) sponsored and approved classroom seminar or on-line training.

5. PROCEDURES

The first step in the CGD application process is to register for the training through IGSPHA. Certification applications can be obtained the AEE website: www.aeecenter.org/certification/cgd. The application may be typed or completed by hand. Certification is based on education and/or commercial geothermal work experience, commercial project experience, and passing the examination.

- Should applicants have doubts about their experience prerequisite for certification, he/she can have his/her application reviewed by the CGD Board prior to taking the exam.

It is very important that all applicants give clear and complete details concerning commercial geothermal heat pump system project design. The CGD Board must have a clear understanding of the applicant's experience.

Once the application is complete and exam is passed, all applications are sent to the CGD Board. The CGD Board reviews the application and gives final approval for certification status.

6. THE APPLICATION

The application provides an organized method for documenting professional and educational background.

The personal data form is divided into the following three parts:

- Education
- Professional Registration
- Experience and Activities

The applicant is requested to list on the application all pertinent information in these categories for evaluation by the CGD Board.

To be awarded the CGD designation, candidates must achieve a pass rate of 70% on the examination. Applicants that do not receive certification status can request that their applications be resubmitted to the CGD Board, if his/her education or experience level changes.

It is essential that candidates devote considerable time and effort to completing the application since certification by the CGD Board can be based only on the information provided. Inaccurate and/or incomplete data will only be detrimental for the applicant. Documentation should be attached to the application to substantiate the information presented.

CGD in Training (CGDIT):

Any candidate with a 4-Year Engineering Degree or PE License who does not meet the experience requirements can complete the CGD in training application and take the CGD exam. The individuals who pass the exam will be awarded the CGD in Training. When the candidate meets the experience requirement, they then submit the CGD Application with all completed supporting documentation to the certification director to be considered by the board for certification.

The CGD in Training Certificate is valid for a period of three years and not eligible for certification renewal. Candidates that wish to upgrade their CGDIT to CGD will not be required to pay an additional fee or complete the exam again assuming the CGDIT certification is current.

The CGD Certification Board may vote any CGD candidate as CGDIT if they feel the candidate did not provide adequate employment or project summary information. These candidates may provide the missing details and have his/her file re-evaluated for CGD certification.

7. THE CGD EXAMINATION

The examination will be administered by AEE at a pre-approved Assessment Systems Remote Testing Location within the United States and Canada. For testing outside of the US and Canada, please contact Francine Seskin, Certification Director, at fseskin@aeecenter.org to arrange the exam.

The applicant must complete the written exam. The examination questions are based on concepts and experiences basic to commercial geothermal heat pump design, on recognized tests, and on supplemental reading. **The Exam is Open Book!**

An examination administrator will proctor the examination. All questions on the written examination are mandatory. The questions will be multiple choice and true/false. Grading is accomplished electronically.

The written CGD Examination deals with such subject as:

1. Codes and Standards
2. Engineering Economic Analysis and Financing
3. Computer Software for Design Analysis
4. Diagnostics and Troubleshooting
5. Installation and Grout/Considerations
6. Product Design and Application
7. Environmental Impact
8. Piping Systems
9. Loop Systems
10. Soil Conductivity

8. MAINTAINING CERTIFICATION

The continued education of professionals is essential to enable them to cope with rapidly changing conditions. Therefore, to remain certified as a, GeoExchange Designer Professional, you must accumulate ten professional credits every three years and submit a completed recertification form to the Certification Director. Each CGD reaches recertification date on the fourth January 1st following the date appearing on the certificate attesting to certification. Professional credits for recertification can be accumulated any time from the date receiving certification to the December immediately proceeding recertification date. Example: professionals certified by examination and receiving a certification in 2012, file a record of ten professional points with the Certification Director by December 31, 2015.

Activities for CGD Credits

Continued employment in a combined geothermal heat pump design, heating, ventilation and air-conditioning:

3 credit for 3 years

Membership in a professional engineering society:

1 credit per year up to 3 credits

Continuing education/professional activities in geothermal heat pump design, heating, ventilation and air-conditioning:

2 credits

Per CEU, college credits hour

or 10 contract hours for seminars

9. RETIRED CERTIFICATION

A CGD upon retiring and reaching the age of sixty-five is designated as “retired”. No further reporting is necessary except to notify the certification director of meeting the age requirement by sending a copy of driver’s license.

10. SUSPENSION OR REVOCATION OF CERTIFICATION

Professionals that do not accumulate the required professional credits, certification shall terminate, unless in the judgement of the certification board, extenuating circumstances exist and the deficiency can be readily overcome.

Certification may be revoked for failure to abide by the AEE Code of Ethics. The professional is offered a hearing by the certification board and notified of the views of the complainant and of the hearing date and location. This notice shall be given in writing at least thirty days in advance of the hearing.

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11. REINSTATEMENT OF CGD

Professionals who do not acquire sufficient CGD maintenance points to be recertified on recertification date will be notified in writing of suspension from using the CGD designation and will no longer be listed as a CGD in any AEE publication until such time that the professional:

- Resubmits to the certification process and successfully meets the criteria for certification by personal data information and examination or,
- Acquires make-up points at a cumulative total, equal to 3.5 per year for every year since original date of certification.

12. FEES

Application Fee

A fee of \$400 is made payable to AEE at the time that the application is submitted. Exams cannot be scheduled until the fee is paid in full. **A \$50 rescheduling fee payable to AEE will be assessed for each reschedule of your CGD exam at a Remote Testing Center.**

Retesting Fees

A fee of \$150 is payable to AEE for each retest of the CGD exam.

Renewal Fee

- For each three-year renewal, the fee will be \$300.00. The renewal fees are payable to AEE.
- Reinstatement fee will be \$350.00. The reinstatement fees are payable to AEE.
- No refunds allowed

13. USAGE

A Certified GeoExchange Designer Professional (CGD) may use the designation with name on organization letterheads, business cards, and all forms of address. Certification is for individuals only. The CGD designation may not be used to imply that an organization or firm is certified.

APPLICATION PART B: APPLICATION WITH PROJECT SUMMARY

TRAINING SITE: _____ DATE: _____



OFFICIAL APPLICATION
For Certified GeoExchange® Designer
(CGD)

ASSOCIATION OF ENERGY ENGINEERS

The following information is to be filled out as completely as possible. Please read the "Policy Book" very carefully, and also follow instructions for completing and forwarding forms. It is important that the AEE Certification Board have substantiating data for each criteria indicated in the application. Please type or print data except where signature is required. **NOTE: ALL APPLICATIONS MUST BE COMPLETE AND THE EXAMINATION FEE OF \$400 MUST BE PAID BEFORE EXAM CAN BE SCHEDULED.**

Mail application to:
AEE – CGD Certification
3168 Mercer University Drive
Atlanta, GA 30341

Payment enclosed \$ _____	Check# _____		
Credit Card Type: Visa ___	Master Card ___	AMEX ___	Discover ___
Card Number: _____	CVV# _____		
Billing Address _____	_____		
Signature _____	_____		

Personal Data (Complete in Full – Please Print or Type)

Address Requested for Correspondence: Business Residence

Prefix: _____ Last Name: _____ First Name: _____ Middle Initial: _____

Social Security No.(Optional): _____ Job Title: _____

Business Name: _____

Business Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

Residence Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

DIVISION I – EDUCATION

List in chronological order the name and location of each college or university attended; also list graduate and research work and other appropriate training.

Name & Location of Institution	Years From - To	Date Graduated	Degree Received	Field in Which Degree Was Issued

Please arrange for Official College Transcripts to be forwarded, but do not delay filing of application.

Please answer the questions in this box.

- 1. Have you taken the **required** IGSHPA CGD training course? ___ Yes ___ No
- 2. Do you have a Heat Fusion Card from a pipe manufacturer and/or an equivalent? ___ Yes ___ No
- 3. Are you the owner of and/or have access to a commercial ground heat exchanger design program? ___ Yes ___ No

DIVISION II – PROFESSIONAL REGISTRATION

2.1 Registration

- A. Certified Energy Manager (CEM) ___ Yes CEM No. _____ ___ No
- B. Registered Professional Engineer ___ Yes ___ No
- C. Registered Architect ___ Yes ___ No

If Registered Engineer or Architect please provide the following:

State	Registration No.	Date	Now in Force
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

Applicants must enclose one copy of the Certificate of Registration for at least one state where registration is now in force; card must indicate that license is currently in force.

Have any states revoked or suspended your registration?

___ Yes ___ No

If yes, please explain: _____

DIVISION III – EXPERIENCE RECORD

Please complete the following in chronological order. Include a description of commercial geothermal heat pump design job functions held for each employment period. The form may be duplicated if additional space is needed.

Date: From-To (mm/yy-mm/yy)	Employer Name & Address	Concise Statement of Employment Experience Please Give GeoThermal Heat Pump Design Job Functions
Title or Position		
Date: From-To (mm/yy-mm/yy)	Employer Name & Address	Concise Statement of Employment Experience Please Give GeoThermal Heat Pump Design Job Functions
Title or Position		
Date: From-To (mm/yy-mm/yy)	Employer Name & Address	Concise Statement of Employment Experience Please Give GeoThermal Heat Pump Design Job Functions
Title or Position		
Date: From-To (mm/yy-mm/yy)	Employer Name & Address	Concise Statement of Employment Experience Please Give GeoThermal Heat Pump Design Job Functions
Title or Position		

Applicant should forward one copy of the EMPLOYMENT VERIFICATION FORM (or CLIENT REFERENCE FORM if self-employed) to each employer for those periods which apply to certification eligibility requirement. Forms may be addressed to either immediate superiors or to personnel offices.

REFERENCES

Furnish the names and addresses of at least 2 references whose standing in the field is generally recognized, i.e., a Registered Professional Engineer, etc.

Name	Company	Position	Specify if individual is a P.E., R.A., CEM, CGD

The official AEE Certification Form for PROFESSIONAL REFERENCES is to be forwarded by applicant to individuals listed below and returned directly by reference.

OBLIGATION

I _____ (Signature), having completed the above to the best of my ability, do hereby apply for AEE Certified GeoExchange® Designer.

AFFIDAVIT

I hereby accept sole responsibility for accumulating and delivering the required supporting documentation as outlined in order to be considered for Certification. The AEE, its employees, officers, instructors, staff, proctors, and Certification Board members are hereby held harmless for all acts of commission or omission of any and all kind which may adversely affect me in any way whatsoever, including but not limited to, loss of employment or promotion, inability to obtain a position which requires any of the AEE Certifications, dismissal from any position, or any other thing or action which may adversely affect me.

I hereby also agree (a) to be bound by the terms and provisions of the Certificate of Incorporation of the Association of Energy Engineers, its by-laws and such other regulations as may from time to time be in force, so far as they may affect me; (b) to indemnify and hold harmless each and all of your members, Board of Directors, Certification Board, employees, officers, instructors, examiners, and agents from and against any liability whatsoever in respect to any act or omission by you or them or any of them in connection with this application, the examination, the grades given upon such examination, and/or the granting or issuance of or failure to grant or issue a certificate to me; (c) that any prescribed fee paid by me is not refundable; and (d) that any certificate granted or issued me shall remain property of the Association.

I certify that all information contained in this application is correct to the best of my knowledge.

I hereby further pledge myself to the highest ethical standards in the practice of geothermal heat pump design.

Signature in Full: _____

Date: _____

Certification Board The AEE Certification board, acting at its regular meeting on _____ 20____ has
(Do not complete) ____ approved ____ disapproved this application as presented for certification classification.

 Secretary, AEE Certification Board

 Date

PROJECT SUMMARY SHEET *Minimum of 3 projects required. See page 2 of Part A for specifications.*

Name: _____

PROJECT NO. 1

Project Name	Date Started	Date Completed
Describe your role and responsibilities		
Type of geothermal heat pump equipment used		
Type of ground heat exchange design software used	Energy analysis programs used	
Project size	Load calculation of facility	

PROJECT NO. 2

Project Name	Date Started	Date Completed
Describe your role and responsibilities		
Type of geothermal heat pump equipment specified and total installed tons		
Type of ground heat exchange design software used	Energy analysis programs used	
Project size	Load calculation of facility	

PROJECT NO. 3

Project Name	Date Started	Date Completed
Describe your role and responsibilities		
Type of geothermal heat pump equipment specified and total installed tons		
Type of ground heat exchange design software used	Energy analysis programs used	
Project size	Load calculation of facility	

PROJECT NO. 4

Project Name	Date Started	Date Completed
Describe your role and responsibilities		
Type of geothermal heat pump equipment specified and total installed tons		
Type of ground heat exchange design software used	Energy analysis programs used	
Project size	Load calculation of facility	

APPLICATION PART C:

**EMPLOYMENT VERIFICATION,
CLIENT REFERENCE, AND
PROFESSIONAL REFERENCE FORMS**



REQUEST FOR VERIFICATION OF EMPLOYMENT

Certified GeoExchange Designer

To: _____

Date: _____

Dear: _____

I am applying to the Association of Energy Engineers for certification as a GeoExchange Designer. In this regard, I hereby authorize your release of the requested information enclosed which verifies my employment and duties from the period _____ to _____.

Please furnish the requested information as completely as possible and return to the AEE Certification Board.

The receipt of replies will be reported by AEE, but under no circumstances will the information be divulged to me, or used for any purpose except to validate my application for Certified GeoExchange Designer.

Applicant Signature

NOTE: IF SELF-EMPLOYED, FURNISH 3 CLIENT VERIFICATIONS

APPLICANT FILL IN (type or print)

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

LETTER OF EMPLOYMENT VERIFICATION

The following information verifies the employment and duties of the above applicant for AEE Certification.

Company: _____ Telephone: _____

Address: _____

City: _____ State: _____ Zip: _____

The above named applicant was (has been) employed by our company from _____ to _____
He/she has held the following positions:

_____ Dates: _____

_____ Dates: _____

_____ Dates: _____

_____ Dates: _____

Please describe in full the responsibilities of the applicant. Attach descriptions if necessary to answer fully. Please include geothermal/HVAC related details.

To the best of my knowledge, I hereby attest that the above information is true and correct.

Name of person supplying information: _____

Official Title of Respondent: _____

Signature: _____ Date: _____

**Return to: AEE Certification Board – CGD
3168 Mercer University Drive
Atlanta, GA 30341**



REQUEST FOR VERIFICATION OF ENGAGEMENT

Certified GeoExchange Designer

To: _____

Date: _____

Dear: _____

I am applying to the Association of Energy Engineers for certification as a GeoExchange Designer. In this regard, I hereby authorize your release of the requested information enclosed which verifies my engagement and duties from the period _____ to _____.

Please furnish the requested information as completely as possible and return to the AEE Certification Board.

The receipt of replies will be reported by AEE, but under no circumstances will the information be divulged to me, or used for any purpose except to validate my application for Certified GeoExchange Designer.

Applicant Signature

NOTE: IF SELF-EMPLOYED, FURNISH 3 CLIENT VERIFICATIONS

APPLICANT FILL IN (type or print)

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

LETTER OF CLIENT VERIFICATION

The following information verifies the Contractor/Consultant and duties of the above applicant for AEE Certification.

Client: _____

Company: _____ Telephone: _____

Address: _____

City: _____ State: _____ Zip: _____

The above contractor/consultant has provided service(s) to our company from:

_____ to _____

Please describe fully the responsibilities of the applicant. Attach descriptions if necessary to answer fully. Please include geothermal/HVAC related details.

To the best of my knowledge, I hereby attest that the above information is true and correct.

Name of person supplying information: _____
(please type or print)

Official Title of Respondent: _____

Signature: _____ Date: _____

**Return to: AEE Certification Board – CGD
3168 Mercer University Drive
Atlanta, GA 30341**



REQUEST FOR REFERENCE INFORMATION

Certified GeoExchange Designer

To: _____

Date: _____

Dear: _____

I am applying to the Association of Energy Engineers for certification as a GeoExchange Designer. In this regard, I hereby authorize your release of the requested information.

Please furnish the requested information as completely as possible and return to the AEE Certification Board.

The receipt of replies will be reported by AEE, but under no circumstances will the information be divulged to me, or used for any purpose except to validate my application for Certified GeoExchange Designer.

Applicant Signature

APPLICANT FILL IN (type or print)

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

LETTER OF REFERENCE

The following information verifies the employment and duties of the above applicant for AEE Certification.

Company: _____ Telephone: _____

Address: _____

City: _____ State: _____ Zip: _____

I have personally known the above named applicant from:

_____ to _____

I am personally familiar with the professional work of the applicant:

Yes No

If yes, please state relationship and brief description of character of work.

Do you know any reason why candidate should be denied certification?

Yes No

If yes, please state reason.

To the best of my knowledge, I hereby attest that the above information is true and correct.

Name of person supplying information: _____
(please type or print)

Official Title of Respondent: _____

Signature: _____ Date: _____

**Return to: AEE Certification Board – CGD
Mercer University Drive
Atlanta, GA 30341**

TRAINING SITE: _____ DATE: _____



OFFICIAL APPLICATION
For Certified GeoExchange Designer[®] (CGD[®]) in Training applicants only

ASSOCIATION OF ENERGY ENGINEERS[®]

The following information is to be filled out as completely as possible. Please read the "Information for Applicants" very carefully, and also follow instructions for completing and forwarding forms. It is important that the AEE Certification Board have substantiating data for each criteria indicated in the application.

NOTE: ALL APPLICATIONS MUST BE COMPLETED AND THE \$400 EXAM FEE MUST BE PAID BEFORE EXAM CAN BE SCHEDULED.

Mail application to:
AEE – CGD Certification
3168 Mercer University Drive
Atlanta, GA 30341

Payment enclosed \$ _____ Check# _____
Credit Card Type: Visa ___ Master Card ___ AMEX ___ Discover ___
Card Number: _____ CVV# _____
Billing Address _____
Signature _____

Personal Data (Complete in Full – Please Print or Type)

Last Name: _____ First Name: _____ Middle Initial: _____

Social Security No.: _____ Job Title: _____

Business Name: _____

Business Address: _____

City: _____ State/Province: _____ Postal Code: _____

Country: _____ E-mail: _____

Phone: _____ Fax: _____

Residence Address: _____

City: _____ State/Province: _____ Postal Code: _____

Address Requested for Correspondence: _____ Business _____ Residence

DIVISION I – EDUCATION

List in chronological order the name and location of each college or university attended; also list graduate and research work and other appropriate training.

Name & Location of Institution	Years From - To	Date Graduated	Degree Received	Field in Which Degree Was Issued

Please answer the questions in this box. This information does not determine certification status and is compiled for office use only.

- 1. Have you taken an IGSHPA Installation course? ___ Yes ___ No
- 2. Do you have a Heat Fusion Card from a pipe manufacturer and/or an equivalent? ___ Yes ___ No
- 3. Are you the owner of and/or have access to a commercial heat exchanger design program? ___ Yes ___ No

DIVISION II – PROFESSIONAL REGISTRATION

- A. Certified Energy Manager (CEM) ___ Yes CEM No. _____ ___ No
- B. Registered Professional Engineer ___ Yes State/License No. _____ ___ No
- C. Registered Architect ___ Yes State/License No. _____ ___ No

OBLIGATION

I _____ (Signature), having completed the above to the best of my ability, do hereby apply for AEE Certified GeoExchange® Designer in Training Certification.

Affidavit

I hereby also agree (a) to be bound to the term and provisions of the Certificate of Incorporation of the Association of Energy Engineers, its by-laws and such other regulations as may from time to time be in force, so far as they may affect me; (b) to indemnify and hold harmless each and all of your members, Board of Directors, Certification Board, employees, officers, instructors, examiners, and agents from and against any liability whatsoever in respect to any act or omission by you or them or any of them in connection with this application, the examination, the grades given upon such examination, and/or the granting or issuance of or failure to grant or issue a certificate to me; (c) that any prescribed fee paid by me is not refundable; and (d) that any certificate granted or issued me shall remain property of the Association.

I certify that all information contained in this application is correct to the best of my knowledge.

I hereby further pledge myself to the highest ethical standards in the practice of geothermal heat pump design.

Signature _____

Date _____ 20_____

Certification Board The AEE Certification board, acting at its regular meeting on _____ 20_____ has
(Do not complete) ___ approved ___ disapproved this application as presented for certification classification.

 Secretary, AEE Certification Board

 Date