



MGEA Ground Source Heat Pump Commissioning/Completion Form

Permit No.

Job & Customer Information

Job Type Residential Commercial New Retrofit Replacement

Owners Name

Phone Number

Mailing Address

Address of Installation

Land Description

Company/Installer Information

Company Name

Accreditation #

Company Address

Designer Name

Certificate #

Installer Name

Certificate #

Loop Installer Name

Certificate #

General Information on Building

Type of Building (bungalow, cottage, etc.)

--If Existing Building--

Existing Heating System

Existing Cooling System

Age of Building

Size of Building in ft² or m² (excluding basement)

Geoexchange System Used For Living Area Space Heating & Cooling Domestic Water Heating

Pool Water Heating Heating & Cooling of Other Adjacent Buildings

Other

Date Installation Began

Date Installation Ended

Total System Cost (no tax)

System Information

Heat Pump #

Manufacturer

Model/Serial #

ARI Certified Yes No

Distribution Type Forced Air Hydronic Combination

Rated Heating Capacity

BTUH at 32°F

Design C.O.P

Rated Cooling Capacity

BTUH at 77°F

Design EER

Desuperheater Yes No

BTUH

Auxiliary Heat Yes No K.W.

Air Filter Installed Yes No

Size

Type of Filter Pleated Electrostatic Electronic

Thermostat Make Model #

Pumping Unit Make Model #

Resilient Pad Installed Yes No P/T Ports Installed Yes No

All Internal Building Piping Insulated Yes No Condensation Drain Connected & Trapped Yes No

Loops Reverse Flushed to Purge Air Yes No

Building Design Heat Load BTUH Building Design Cool Load BTUH

Percentage Sizing 70% Min. Per CSA 448.2-02

Copy of Load Calculation Included with Start-up Report Yes No

Loop Information

Pipe Configuration Vertical Horizontal Lake

--If Closed Loop--

Depth of Trenches or Bore Holes Number of Bore Holes

Horizontal Trench Pipe Configuration

Reynolds Number Calculated Fluid Pressure Drop

Antifreeze Type Freezing Point

Percentage Flow Constant

Bore Hole/Well Logs Yes No Loop Site Map Included Yes No

Tracer Wire Installed Yes No Bore Holes Grouted and Sealed Yes No

Supply & Return Valves Installed Properly and Labelled Accordingly Yes No

Label at Loop Charging Valve Showing Antifreeze Type, Concentration and Date Yes No

Label Showing Contractor Information and Contact Numbers Yes No

Open Loop Information

GPM Flow Rate Reject Well Into Same Aquifer as Production Well Yes No

Distance Apart From Supply & Return Wells Solenoid Valves Installed Yes No

Provincial Water Rights Licence #

CFM Calculation/Auxiliary Heat Information

Air In °F Voltage Measured

Air Out °F AMPS Measured

ΔT °F

Auxiliary Heat Capacity K.W.

Fan CFM Fan CFM = $\frac{V \times \text{Amps} \times 3.412}{1.08 \times \Delta T}$

Unit Operation *Desuperheater Off

Entering Fluid Pressure Leaving Fluid Pressure Fluid Pressure Difference

Flow Rate from Manufacturer Specs gpm

| | Heating °F | Cooling °F | Hydronic °F |
|--|----------------------|----------------------|----------------------|
| Entering Fluid Temperature | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Leaving Fluid Temperature | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Fluid Temperature Difference ΔT | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Entering Air/Fluid Temperature | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Leaving Air/Fluid Temperature | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Air/Fluid Temperature Difference ΔT | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Voltage | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Total Amps C+F (Compressor & Fan Amps) = | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Heat Transferred (Btuh) = USGPM X ΔT X FC
 Where: USGPM = Manufacturer's USGPM Rating From ΔT Measured Across Heat Exchanger
 ΔT = Temperature Difference Across Coil
 FC = Flow Constant (e.g. 490 for 20% methanol/500 for water) (varies based on type and percentage of antifreeze)

| | |
|---------|--|
| Heating | Heat Transferred (HE) = USGPM <input type="text"/> X Fluid ΔT <input type="text"/> X FC <input type="text"/> = Btuh <input type="text"/> |
| | Power Input (Watts) = Volts <input type="text"/> X Amps <input type="text"/> X 0.90 (assumed power factor) = Watts* <input type="text"/> |
| | Power Input (Btuh) = Watts <input type="text"/> X 3.412 = <input type="text"/> Btuh |
| | Total Btuh (HC) = Heat Transferred <input type="text"/> + Power Input in Btuh <input type="text"/> = Total Btuh <input type="text"/> |
| | Instantaneous COP = Total Btuh <input type="text"/> / Power Input in Btuh <input type="text"/> = Instantaneous COP <input type="text"/> |

| | |
|---------|--|
| Cooling | Heat Transferred (HR) = USGPM <input type="text"/> X Fluid ΔT <input type="text"/> X FC <input type="text"/> = Btuh <input type="text"/> |
| | Power Input (Watts) = Volts <input type="text"/> X Amps <input type="text"/> X 0.90 (assumed power factor) = Watts* <input type="text"/> |
| | Power Input (Btuh) = Watts <input type="text"/> X 3.412 = <input type="text"/> Btuh |
| | Total Btuh = Heat Transferred <input type="text"/> - Power Input in Btuh <input type="text"/> = Total Btuh <input type="text"/> |
| | Instantaneous EER = Total Btuh <input type="text"/> / Power Input in Watts <input type="text"/> = Instantaneous EER <input type="text"/> |

HE = Heat of Extraction HC = Heating Capacity *For 3 Phase V X A X 0.90 X 1.73 = WATTS
 HR = Heat of Rejection ΔT = Temperature Difference

Miscellaneous Duct Work Connections

Type New Retrofit Flex Connectors Installed Yes No
 Plenum Insulated Yes No Air Filter Accessible Yes No
 R.A. Elbow Insulated Yes No Service Doors Accessible Yes No
 Size of Existing Ductwork Verified to be Sufficient Yes No

Miscellaneous

Owner Has Been Informed on System Operation, Thermostat Functions, Maintenance Requirements Yes No
 Manufactured Document and Warranty Information Provided to Owner Yes No

General Installation Information & Overall Operation of System (Inspector Only)

- Piping Great Good OK Bad
- Duct Connectors Great Good OK Bad
- Unit Installation Great Good OK Bad
- Noise Level Very Loud Loud Quiet Very Quiet
- Vibrations
- System Installation Approved Yes No

Additional Comments & Information

Declaration of System Compliance

I declare that all the contents of the foregoing Commissioning/Completion Report are true to the best of my knowledge, information, and belief.

Company Name:

Contractor /Installer Name:

Signature:

Date:

(This document represents CSA 448 standards and operational policies and procedures adopted by MGEA)