INTERNATIONAL GROUND SOURCE HEAT PUMP ASSOCIATION

Acronyms and Terminology

GSHP Industry Training Series

Acronyms and Terminology

IGSHPA
INTERNATIONAL GROUND SOURCE HEAT PUMP ASSOCIATION

Terminology/Definitions

- **AHJ** – an acronym for “Authority Having Jurisdiction”
- **ANSI** – an acronym for “American National Standards Institute”
- **AHRI** – an acronym for “ Air-Conditioning, Heating, and Refrigeration Institute
- **ASHRAE** – an acronym for “ American Society of Heating, Refrigeration and Air-Conditioning Engineers”
- **BAS** – an acronym for “Building Automation System”

Acronyms and Terminology

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Terminology/Definitions - continued

- **Borehole or Borehole heat exchanger** – a hole in the soil developed by a drilling or boring method to install a ground heat exchanger (GHX) into a dry borehole. (e.g., non-water producing)
- **CSA C448** – a CSA Group/ANSI/IGSHPA design standard for U.S. and Canada. (i.e., Design and installation of ground source heat pump systems for commercial and residential buildings.)
- **CGD** – an acronym for “Certified GeoExchange Designer“
- **Closed-Loop (source) system** – a continuous, sealed, underground, or submerged heat exchanger through which a heat-transfer fluid passes to and returns from a heat pump.
- **Commercial/institutional building** – the use or intended use of a building as defined by the local building code.

Acronyms and Terminology

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Terminology/Definitions - continued

- **Design** – a set of drawings, schedules, and specifications prepared by an engineer or designer for purposes of construction. *Note: For a ground source heat pump system design, this might include a set of calculations, parametric studies, and modeling results for purposes of construction of the system.*
- **Designer –** the entity legally responsible for the ground source heat pump system design. *Note: this can be the engineer of record (P.E. or P.Eng.), a contractor who designs and installs ground source heat pumps systems, or other entity acceptable to the authority having jurisdiction.*
- **Design load calculation** – a load calculation determining the heat loss and gain in accordance with CSA F280 or ACCA Manual J for residential dwelling units or with the ASHRAE Handbook – Fundamentals for non-residential dwelling units.

Acronyms and Terminology

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Terminology/Definitions - continued

- **District Energy System** - Also known as “district heating and cooling systems”, “district geothermal systems”, “community heat pump systems” fifth and sixth generation district heating and cooling systems”, “thermal energy networks”, and “utility thermal energy networks”.
- **Dynamic Check Out List** – a performance analysis of an operational unit gathering real time data and verification for final performance and benchmark records.
- **Direct Exchange (DX) System** – a ground source heat pump system that uses a heat pump and a refrigerant-charged ground heat exchanger. *Note: Also known as “direct geoexchange heat pumps” (DGX), “direct exchange geothermal systems” (DX), “direct expansion” (DX), or “direct exchange ground coupled heat pumps (DXGCHP).*
- **Engineer** – a person in the engineering profession with specific expertise in ground source heat pump systems who is licensed to practice in the jurisdiction where the project is located.

Acronyms and Terminology

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Terminology/Definitions - continued

- **Field header** – a buried or submerged pipe assembly that connects multiple boreholes or loops to supply and return piping.
- **Flush Ports** – fluid ports of proper diameter and location to enable external pump connections for flushing debris and purging air from every part of a ground heat exchanger.
- **Geothermal Drillers Association (GDA)** – is a membership-based organization advocating for professional development of safety standards, fostering education, workforce training, professional licensure, geothermal driller efficiency and innovation, quality control, and fostering collaboration with other organizations within the GSHP industry.

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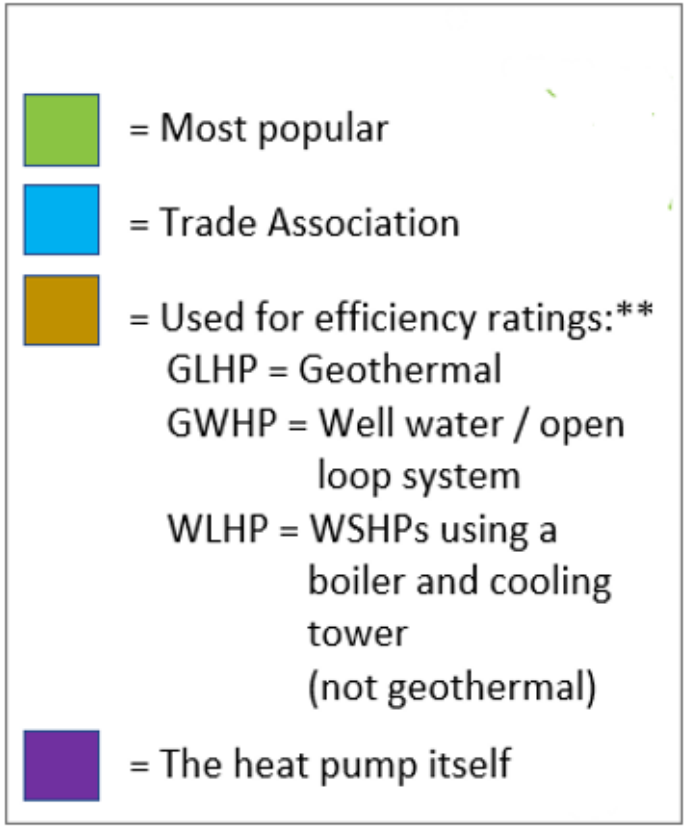
Terminology/Definitions - continued

Common references used by industry:

- Geothermal Heat Pump* (GHP)
- Ground Source Heat Pump (GSHP)
- GeoExchange
- Ground Loop Heat Pump (GLHP)
- Ground Water Heat Pump (GWHP)
- Water Loop Heat Pump (WLHP)
- Water Source Heat Pump (WSHP)
- Direct Exchange Geothermal (DX)
- Earth Coupled Heat Pump
- Earth Energy Systems



*Used by DOE and in legislation (tax credits)

**AHRI (Air Conditioning, Heating, Refrigeration Institute)

Acronyms and Terminology

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Terminology/Definitions - continued

- **GeoExchange (GEO)** – The Geothermal Exchange Organization is an advocacy and marketing voice of the geothermal heat pump industry in the United States. They work closely with the International Ground Source Heat Pump Association**.**
- **GSHP** – an acronym for a “ground source heat pump”
- **GHEX or GHX** – an acronym for a variety of heat exchangers, external or below a building, that use the ground, groundwater, or surface water as a heat source or sink.
- **GHP** – an acronym for a “geothermal heat pump”
- **Ground source heat pump (GSHP) system** – a variety of systems that use the ground, groundwater, or surface water as a heat source and sink.

Acronyms and Terminology

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Terminology/Definitions - continued

- **Grout** – a sealing material placed into the annular space between the loop assembly and the borehole wall.
- **HDPE** – an acronym for “high density polyethylene” a grade of polyethylene (PE) thermoplastic pipe material.
- **Horizontal ground heat exchanger** – a ground heat exchanger that is inserted into a trench, open excavation, or installed by a horizontal drilling method.
- **HTF or HTS** - an acronym “heat transfer fluid or solution” used for heat transfer between the heat pump and the sources or sinks.

Acronyms and Terminology

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Terminology/Definitions - continued

- **IAPMO** – an acronym for “International Association of Plumbing and Mechanical Officials”
- **IGSHPA** – an acronym for the “International Ground Source Heat Pump Association”
- **Interior piping** – piping that is installed in ground source heat pump system vaults or mechanical rooms and used to transition from buried ground loop piping to indoor mechanical systems. It can include manifolds when installed in interior spaces or vaults.
- **ISO** – an acronym for “International Organization for Standardization”
- **ISO 13256-1** – a certification standard used by ISO for Water-to-Air WSHP’s.
- **ISO-13256-2** – a certification standard used by ISO for Water-to-Water WSHP’s.

Acronyms and Terminology

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Terminology/Definitions - continued

- **Local requirements** – laws or statues that regulate the use of products, materials, or services within a jurisdiction. Note: Examples of local requirements can include those requirements from authorities having jurisdiction in various municipalities, cities, counties, provinces, states, etc.
- **Loop** – the basic component of a ground heat exchanger where energy transfer occurs between the ground and a mechanical system via a heat transfer fluid.
- **Low Temperature geothermal** – a ground source heat pump heating and cooling system using constant ground temperature as a heat source and sink at depths typically 5 to 800 feet, depending upon the type of heat source/sink.
- **Manifold** – an accessible pipe assembly that connects multiple boreholes or loops to supply and return piping. *Note: Typically, manifolds have valves and testing ports for temperature and pressure. They can be installed in a building's mechanical room, known as a "building manifold" or a collection vault, known as a "vault manifold".*

Acronyms and Terminology

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Terminology/Definitions - continued

- **Measured undisturbed ground temperature** – the measured mean temperature over the entire depth of the geo-exchange field, as determined by a thermal response test.
- **NGWA** – an acronym for the “National Ground Water Association”
- **Open-loop (surface water or ground water) system** – a system designed to use ground water or surface water for the purpose of extracting or rejecting heat by use of a water source or ground source heat pump.
- **OSHA** – an acronym for “US Occupational Safety and Health Administration”

Acronyms and Terminology

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Terminology/Definitions - continued

- **Owner** – an individual, group of individuals, or legal entity who, for a consideration, contracts with others for the supply and installation of a ground source heat pump system.
- **Pipe circuit** - a collection of one or more loops forming a portion of the ground heat exchanger including supply and return piping.
- **PPI** – an acronym for “Plastic Pipes Institute”
- **Residential** – the use or intended use of a building as defined by the local building code.

Acronyms and Terminology

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Terminology/Definitions - continued

- **RFI** – Request for Information, an acronym commonly used by contractors or designers during the bidding process to clarify information gaps in certain construction materials or during the building phase to gain clarity from designers on a project specifications or drawings. In construction thirteen (13) types of RFIs are utilized.
- **RFQ** - Request for Qualifications, an acronym commonly used by contractors or designers during the design or bidding process asking candidates to submit a summary of their qualifications and experience. RFQ's should be used prior to issuing an RFP to ensure an open, equitable, diverse and competitive pool of applicants apply. Many times, candidates receive compensation for time spent responding to your open call for applications. This is an equitable practice that enables smaller firms with limited resources to stay in the game.
- **RFP** – Request for Proposal, an acronym commonly used to announce a project and solicit competitive bids *(which reduce bias)* from qualified contractors to complete it. It defines the project *(typically complex involving multiple subcontractors),* its goals, and the organization sponsoring it.

Acronyms and Terminology

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Terminology/Definitions - continued

- **Standards Development Organization (SDO)** – an entity that develops and revises standards for quality and safety in various industries. (e.g., ANSI, CSA Group, IAPMO…)
- **Surface water** – any body exposed to the atmosphere used to exchange energy with a building mechanical system utilizing an open- or closed loop piping system.
- **Thermal Conductivity (TC)** - testing of undisturbed geology at the site for GHX's using the ASHRAE Line Source Method to identify how easily one atom or molecule of a material accepts or gives away heat. – (i.e., a TC Test is *recommended for commercial projects or large custom homes designed with Vertical GHX's after a preliminary design)*
- **Tremie pipe** – a pipe of sufficient diameter to allow for the pumping of grouts to the bottom of a closed-loop borehole.

Acronyms and Terminology

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Terminology/Definitions - continued

- **U-Bend assembly** – a 180-degree directional change in a ground heat exchanger pipe, typically used at the bottom of a vertical borehole, that is fabricated or formed using a one-piece molded fitting attached to HDPE pipes via butt fusion approved fittings for PE-RT or PEX pipe and tubing, or jointless hot-forming techniques for HDPE, PE-RT, or PEX
- **Vertical Ground Heat Exchanger** – a ground heat exchanger resulting from the installation of a vertical or inclined borehole, placement of the loop piping to the bottom of the borehole and grouting via the tremie method from the bottom of the borehole to the ground surface.
- **Water Well** – an excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed for the purpose of extracting groundwater, monitoring ground water, using the geothermal properties of the earth, or injecting water into an aquifer or subsurface reservoir.

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Industry Acronyms and Terminology

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