

Interfacing Trane Simulations with GLD

The purpose of this document is to demonstrate how cooling and heating load data required by the GLD software can be derived from Trane energy simulation results.

Introduction

GLD considers many variables when calculating the geothermal heat exchangers. For example, in the design of a vertical loop system, GLD analyzes loads requirements, borehole depth, spacing, and quantity, along with piping lengths, soil thermal conductivity, and fluid properties. The role of Trane Trace is to generate the load that GLD uses to optimize the heat exchanger design. Both cumulative loads and peak loads for all months of the year are required to take advantage of GLD's full analysis capability.

GLD Load Requirements:

1. Total monthly cooling coil load (kBTU) (cumulative effects)
2. Maximum hourly cooling coil load (BTUH) (peak magnitude)
3. Total monthly heating coil load (kBTU)
4. Maximum hourly heating coil load (BTUH)

These four requirements automatically are output by Trane Trace in the form of GTH or GTXfiles. In turn, these GTH or GTXfiles can be imported into GLD for easy use.

How to Create a GTH File

Overview

When ground source heat pump equipment is included with a TRACE calculation, a GT report is generated. This file can be found in the same location as the main file and although it will have the same name as the original file, the extension will be GT1 for alternative 1, GT2 for alternative 2, etc. This file contains the monthly peak heating and cooling loads calculated by TRACE and can be imported into GLD for use in calculating the capacity of the loop.

Method

- 1 You must run Trane Trace v6 or later to output GTH/GTXfiles
- 2 On the cooling plant equipment side, select Water Source in Plant and then select Ground Source as can be seen in the image below:
- 3 When performing the calculations, check the energy selection
- 4 GTH/GTXfiles are created automatically and exported into the folder where outputs normally go
- 5 Transfer the GTH/GTXfiles into the Ground Loop Design/Zones folder
- 6 You can now import these files into GLD.

Create Plants

Alternative 1

Cooling plant

Cooling plant - 005

Equipment tag

GSHP - 001

Equipment category

Water source heat pump

Equipment type

Ground Source HP - High Effic

Sequencing type

Single

Heat rejection

Type

WSHP - Cooling tower

Hourly ambient wet bulb offset

Thermal storage

Type

Heat pump cond loop sizing 25x

Capacity

37

gal/ton

Schedule

Heatpump

Apply

Close

New Equip

Copy Equip

Delete Equip

Controls...

Operating mode	Capacity	Energy rate
Cooling	tons	0.761 kW/ton
Heat recovery	10.88 Mbh/ton	0.0637 kW/Mbh
Tank charging	tons	kW/ton
Tank charging & heat recovery	tons	kW/ton

Pumps	Type	Full load consumption
Primary chilled water	Cnst vol chill water pump	0 ft water
Condenser water	None	0 ft water
Heat recovery or aux condenser	None	0 ft water

Configuration

Cooling Equipment

Heating Equipment

Base Utility / Misc. Accessory