



# SOLUTIONS



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*Focused on The Engineered Environment*

September 2012

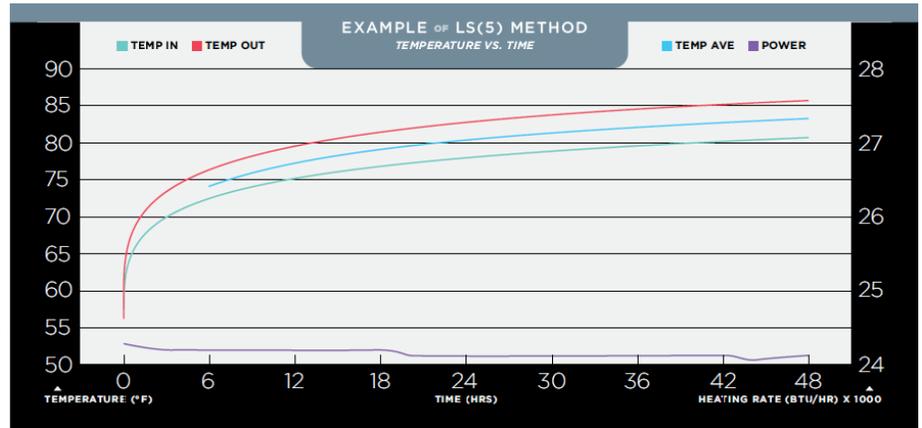
Welcome to SOLUTIONS, a monthly newsletter provided by Jacco & Associates. Jacco's focus on system knowledge provides you with the engineering support and product solutions for your applications.

## September Feature:



## Thermal Conductivity Testing

Water Furnace has the capability of assisting you with your geothermal ground loop design and sizing. Part of this process is performing a Geothermal Conductivity Test. The thermal conductivity is measured by monitoring the difference between the entering and leaving water temperatures of the testing equipment. A fully functioning test loop is installed somewhere on the property. Once the installation is complete, the test loop is required to "rest" for 3-5 days before beginning the test procedure. The testing is conducted over a minimum period of 40-48 hours. During this time, data is recorded electronically at 60 second intervals. The testing procedure requires an external power source whether it be a generator or outlet.



Thermal Conductivity	Number of Wells	Bore Depth	Total Loop Length
0.60 BTU/HR-FT-°F	14	202 FT	5,650 FT
0.75 BTU/HR-FT-°F	12	199 FT	4,770 FT
0.90 BTU/HR-FT-°F	10	210 FT	4,190 FT
1.05 BTU/HR-FT-°F	9	210 FT	3,780 FT
1.20 BTU/HR-FT-°F	9	193 FT	3,460 FT
1.35 BTU/HR-FT-°F	8	202 FT	3,220 FT
1.50 BTU/HR-FT-°F	8	190 FT	3,030 FT

Because the design and overall loop length of the ground loop heat exchanger is so greatly impacted by the value of the conductivity, testing can be economically justified in installations as small as 30 tons. In addition the test well is a fully functional geothermal well and can be incorporated into the final loop installation.



## September Question & Answer:

**Question:** What change in bore length would be required when targeting a 1.05 thermal conductivity, but tests show a value of 0.75? A.) 15% Decrease B.) 15% Increase C.) 26% Decrease D.) 26% Increase

**Prize:** Electric Smoker!

## Last Month's Question & Answer Winner!

**Question:** Which of the following is not a source of reheat in a DX system?

**Answer:** A.) Hot Gas Bypass. Congratulations to Jeff DuPay For Winning a Cleveland Browns Tailgate Package!

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