

# Thermal Response Test Equipment Data

Fill-in Date: 10-2010

Country: Japan

Contact Person: Yasushi NAKAMURA

Organisation/Company: Nippon Steel Engineering

Address: 5-1, Osaki-1, Shinagawa-ku, Tokyo, 141-8604, Japan

Phone: +81-3-6665-4180

Email: [nakamura.yasushi@nsc-eng.co.jp](mailto:nakamura.yasushi@nsc-eng.co.jp)



## GENERAL TRT DATA

Type: <i>Heat injection</i>	No TRTs: <i>1</i>	Size, weight: <i>Approximately 150 kg</i>
Aim: <i>Research</i>		Pump: <i>Flow rate 0 ~40 L/min</i>
Powered by: <i>Electricity</i>		Heater: <i>1~7 kW (AC200)</i>
Built on/in: <i>portable</i>		HP/Cooler: <i>Nothing</i>
<p><b>Principle outline</b></p> <p>The diagram illustrates the system components and their interconnections. A 200V power source is connected to a transformer with a DT (Data Transfer) unit. The transformer outputs 100V to the monitoring cabinet, which contains a data logger and a communication device. The main machine includes an expansion tank, electric heater, and circulation pump. It is connected to a GHEX (Ground Heat Exchanger) with flow directions 'To GHEX' and 'From GHEX'. Data lines connect the monitoring cabinet to the main machine.</p>	Temperature measurements: - <i>Pt-100 sensor (Proof read in <math>\pm 0.01\%</math>)</i>	
	Flow rate measurements: - <i>Electromagnetic flowmeter</i>	
	Voltage stabilization: <i>Yes</i>	
	Supply Power Monitoring: <i>Yes</i>	
	GPS: <i>No</i>	
	Remote Control of Operation: <i>No</i>	
	Remote Data Collection: <i>Yes</i>	
Logger: <i>Yokogawa DX1000</i>		

## TRT EXPERIENCE

Years of operation: *2005*

Number of performed measurements: *3 Research*

Typical borehole depths: *10 ~ 100 m*

Applications: *BHE, Energy piles*

Typical collector type: *1U-6U, coaxial pipe, type of filling: Water*

Typical fluid type: *Water or Antifreeze liquid*

Typical groundwater temperature: *10°C*

Geographical area: *Hokkaido*

Analysis Method: *Numerical, Line source, Honor plot*