ABSTRAK

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Tujuan penelitian ini adalah untuk mengetahui nilai gradien suhu sumber air panas Pentadio Resort dan Bagaimanakah distribusi gradien suhu panas bumi Pentadio Resort Kabupaten Gorontalo.Penelitian ini merupakan penelitian survei dengan melakukan pengukuran langsung di lapangan.Sampel yang digunakan adalah 4 reservoir panas bumi dengan 16 titik pengukuran yang ada di sekitar reservoir. Analisi data dilakukan dengan 2 cara yakni dengan cara *komputerisasi* dan cara *analitik.* Cara *kumputerisasi* dengan menggunakan software Ms. Office Excel dan Software surfer ver. 8.0. Dari hasil analisis data maka disimpulkan bahwa reservoir panas bumi yang ada di objek wisata Pentadio Resort memiliki gradien suhu yang tinggi dengan nilai 0,054 –0,250^{0}C/cm (rata-rata gradien suhu permukaan bumi 0,0007-0,0008 ^{0}C/cm). Gradien suhu mengalami peningkatan di sekitar reservoir 3 (dengan nilai 0,22^{0}C/cm) dan menyebar ke arah Barat-Daya area penelitian. Titik lain dengan peningkatan nilai gradien suhu berada di sekitar reservoir 4 (dengan nilai 0,183) dan menyebar ke arah reservoir 1 (dengan nilai 0,250^{0}C/cm) yang berada di sebelah Tenggara dan sebelah Timur area penelitian. Berdasarkan temperatur fluida maka reservoir panas bumi yang ada di sekitar objek wisata Pentadio Resort termasuk kategori reservoir bertemperatur rendah (<125^{0}C) dengan suhu antara 56.86 ^{0}C - 111.67^{0}C dengan asumsi daya per satuan adalah 10 MW/km^2.Adapun metode yang paling cocok untuk digunakan dalam pemanfaatan potensi geothermal menjadi energy alternative pembangit listrik adalah sistem *Binary Cycle* dengan menggunakan cairan *iso-butana* sebagai *fluida working.*

Kata Kunci: Gradien Suhu, Temperatur *Geothermal*, IC LM35DZ.

ABSTRACT

Sandiwanto S. Student ID 421408069. Skripsi. Analysis of Geothermal Gradient Temperature at the Pentadio Resort Tourism Site of Gorontalo District. Department of Physics, Faculty of Mathematics and Science, State University of Gorontalo. The principal supervisor was Raghel Yunginger, S.Pd, M.Si and Co-supervisor was Tirtawati Abdul, S.Pd., M.Pd.

The objective of this research is to find out the value of geothermal gradient temperature at the Pentadio Resort hot spring in the District of Gorontalo. This research was a survey research with direct measurement in the field. The sample in this research was four geothermal reservoirs with 16 spots of measurement around the reservoirs area. The data were analyzed using the computerization and analytical analysis. Computerization of the data was done with the help of the Ms. Office Excel program and Surfer Software 8.0. It was concluded from the analysis that the geothermal reservoirs at the Pentadio Resort had the high temperature gradient ranging from .054 to .250^{0}C/cm (the average gradient of the earth surface is .0007-.0008^{0}C/cm). The temperature gradient increased around the reservoir number 3 (with the value of .22^{0}C/cm) and spreads to the southwest area. Another spot with the increased gradient temperature was in the area of reservoir 4 (with the value of .183^{0}C/cm) and spreads to the direction of reservoir 1 (with the value of .250^{0}C/cm) in the southeast and east of the research area. Based on the fluid temperature, the geothermal reservoir in Pentadio Resort was categorized as low temperature reservoir (<125^{0}C) with the temperature ranging from 56.86^0 C to - 116^{0}C with the assumption that the power per unit is 10 MW/km^2. The most suitable method to be used in cultivating the geothermal energy as alternative electricity energy is through Binary *Cycle by using the iso-butane liquid as working fluid.*

Keywords: Temperature-Gradient, Geothermal Temperature, IC LM35DZ