

## Development of a long-term deep resistivity and self-potential monitoring system

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High-power multi-channel automatic electrical survey equipment was designed and developed for long-term monitoring of subsurface geothermal fluids. This equipment enables automatic measurements of deep resistivity monitoring and self-potential (SP) monitoring. The advantage of this equipment is as follows.

(1) The commercial power supply of 100 volts or 200 volts is used and a commutated direct current of a maximum of 12 A can be transmitted.

(2) Resistivity and SP data for arbitrary electrode configuration are automatically collected according to the program of a personal computer.

(3) Long-term resistivity and/or SP monitoring can be performed stably and safely.

This equipment was tested in the Ogiri geothermal field, Kagoshima prefecture, where continuous SP monitoring and repeated resistivity surveys had been carried out. Highly precise resistivity and SP data were acquired efficiently, indicating that the equipment is applicable to the monitoring of subsurface fluid and in geothermal and volcanic areas.