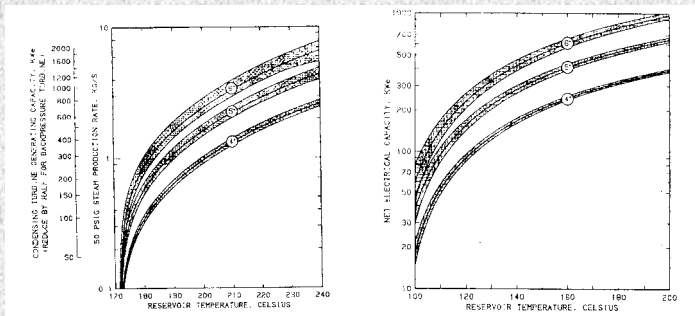


# Mini-Geothermal for Village Power

John Finger (Sandia National Laboratories) & Jim Combs (Geo Hills Associates)

## One Slim Hole can Supply Enough Working Fluid for a Small Power Plant

- Small diameter (< 6") holes can provide enough steam or brine for power plants ranging from 100 kW to several MW.
- Slim holes require smaller drill rigs, which have less environmental impact, lower costs, and provide easier access to remote locations.
- If large-scale production is a subsequent possibility, slim holes also give reliable predictions of a reservoir's productivity.



These curves show power production from different hole sizes and temperatures for both flash and binary plants.



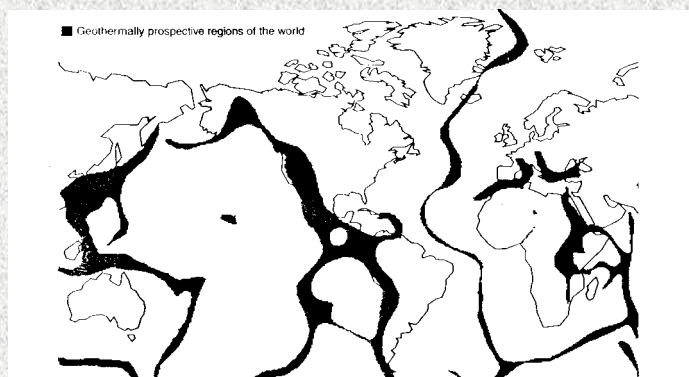
A 300-kW geothermal binary plant has operated for four years in Fang, Thailand.

## Small Power Plant Technology Exists

- Small power plant technology exists in modular form, and has been demonstrated in sizes as small as 100 kW.
- Geothermal power plants are extremely reliable, with an average load factor over 90%.
- Geothermal power plants require much less surface land area than wind or solar plants.

## Economic Highlights

- Power from small geothermal plants is usually not considered for a developed grid, but can be highly competitive compared to other options for remote locations. It is especially suitable for base-load generation.
- Cost of power will be highly site-specific, but analysis for a representative example gives a rate less than US\$0.15/kWh
- The analysis above does not consider cost savings from using slim holes.
- Most geothermal resources in Africa, Central America, and around the Pacific Rim are in emerging economies.



World-wide prospective geothermal areas based on volcanism, seismicity, and plate boundaries.

## GEOTHERMAL OFF-GRID POWER WORKSHOP

This workshop will be held in Reno, Nevada, on December 2 - 4, 1998. It will be directed at anyone involved with reducing the costs and increasing the availability of geothermal base-load, small-scale electrical power installations.

Brochures are available from John Finger, Sandia National Laboratories, (505) 844-8089 or [jtfinge@sandia.gov](mailto:jtfinge@sandia.gov) or the Geothermal Resources Council at (530)758-2360.