

LISTING OF CHALLENGED CLAIMS

Element	Claim Language
Claim 1	
Preamble 1	Method for recovering geothermal heat, which comprises enhancing the flow of geothermal fluid from at least one injection well to at least one production well, by the following steps:
1a	Providing a first, horizontal, geothermal well in the ground at a geological layer having an elevated temperature, which is used as said injection well;
1b	Injecting water into said injection well, whereby the injected water is heated;
1c-1	Providing a second, horizontal, geothermal well in the ground, which is used as said production well,
1c-2	such that said second, horizontal, production, geothermal well is substantially horizontally and vertically spaced from said first, horizontal, injection, geothermal well by a distance dependent on the elevated temperature and
1c-3	located at a shallower depth than said first, horizontal, injection, geothermal well;
1d	Recovering geothermal fluid from said production well;
1e	Generating a water density difference and a pressure difference between said first horizontal, injection well and said second horizontal, production well; and
1f	Inducing geothermal fluid into said second horizontal geothermal well from the geological layer because of buoyancy of the water and

	the pressure difference between the horizontal injection and horizontal production wells.
Claim 2	
2	Method according to claim 1, wherein the horizontal wells are provided by drilling along a geological layer.
Claim 3	
3	Method according to claim 1, comprising increasing the pressure difference by pressurizing the water, injected in the horizontal, deeper injection well, above the hydrostatic pressure existing at the depth of the horizontal deeper injection geothermal well, and reducing the pressure in the horizontal, shallower production well using a fluid pump connected to said horizontal production well.
Claim 4	
4	Method according to claim 1, further comprising extracting heat from the geothermal fluid recovered from the production well and using said heat for the production of energy.
Claim 5	
5	Method according to claim 1, wherein the water injected into the injection well is the geothermal fluid, recovered from the production well, depleted of heat by heat exchange.
Claim 6	
6	Method according to claim 1, further comprising monitoring the pressure difference.
Claim 7	
7	Method according to claim 1, wherein the first and second horizontal, geothermal wells are formed in a geological layer the suitability of which has been determined.

Claim 8	
8	Method according to claim 3, wherein the suitability of the geological layer is determined by geophysical surveys and by drilling slim holes in said layer.
Claim 9	
Preamble 9	Apparatus for enhancing the flow of geothermal fluid from at least one injection well to at least one production well, which comprises:
9a	A first, horizontal geothermal well, which is used as said injection well into which water is injected,
9b	A second horizontal, geothermal well, which is used as said production well from which geothermal fluid issues, wherein said second, horizontal, production, geothermal well is substantially horizontally and vertically spaced from said first, horizontal, injection, geothermal well and located at a shallower depth than said first, horizontal, injection, geothermal well; and
9c	Means for producing a water density difference and a pressure difference between said first horizontal, injection well and said second horizontal, production well,
9d	wherein the first horizontal, injection geothermal well has an open slotted outlet, from which injected water flows into the geological layer in which the well has been drilled, and the second horizontal, production geothermal well has an open slotted inlet, whereby geothermal fluid flows into it from the geological layer because of buoyancy of the water and the pressure difference between said horizontal injection and horizontal production wells.
Claim 10	
10	Apparatus according to claim 9, further comprising instrumentation for monitoring the pressure difference.

Claim 11	
11	Apparatus according to claim 9, further comprising an observation well connected to the second horizontal, production geothermal well, and wherein the instrumentation comprising observation instrumentation present in said observation well.
Claim 12	
12	Apparatus according to claim 9, wherein the first horizontal, geothermal well has a length up to 1.25 miles.
Claim 13	
13	Apparatus according to claim 9, wherein the second horizontal, geothermal well has a length up to 1.25 miles.
Claim 14	
14	Apparatus according to claim 9, wherein the horizontal distance between the first horizontal well and the second horizontal well is up to 2000 feet.
Claim 15	
15	Apparatus according to claim 9, wherein the vertical distance between the first horizontal well and the second horizontal well is up to 150 feet.
Claim 16	
16	Apparatus according to claim 9, further comprising a power plant comprising an electricity generator and at least one turbine for driving said generator, conduit means for conveying geothermal fluid to said power plant whereby said geothermal fluid becoming heat-depleted, and conduit means for conveying heat-depleted geothermal fluid from said power plant to the horizontal, injection well.

Claim 17	
17	Apparatus according to claim 9, further comprising a heat exchanger, conduit means for conveying geothermal fluid to a heat exchanger whereby to heat is transferred to a working fluid for producing power in a power plant.
Claim 18	
18	Apparatus according to claim 17 including a binary power plant comprising an organic vapor turbine operating according to an organic Rankine cycle.
Claim 19	
19	Apparatus according to claim 18 wherein said binary power plant includes an air-cooled condenser.
Claim 20	
20	Apparatus according to claim 18 wherein the working fluid of said binary power plant is pentane or isopentane.
Claim 21	
21	Apparatus according to claim 18 wherein the working fluid of said binary power plant is butane or isobutane.
Claim 22	
22	Apparatus according to claim 17 wherein said power plant is a combined cycle geothermal power plant.
Claim 23	
23	Apparatus according to claim 9, further comprising a water injection pump for injecting heat-depleted geothermal fluid into the horizontal, injection well.

Claim 24	
24	Apparatus according to claim 9, further comprising a deep well pump connected to the horizontal production well for pumping hot geothermal fluid from the production well.
Claim 25	
25	Apparatus according to claim 9, wherein the horizontal, injection geothermal well comprises a perforated horizontal pipe.
Claim 26	
26	Apparatus according to claim 9, wherein the second horizontal, production geothermal well comprises a perforated horizontal pipe.
Claim 27	
27	Apparatus according to claim 25, wherein the perforated horizontal pipe is perforated on its lower surface.
Claim 28	
28	Apparatus according to claim 26, wherein the perforated horizontal pipe is perforated on its lower surface.
Claim 29	
29	Apparatus according to claim 9, wherein the production horizontal geothermal well is generally parallel to the injection horizontal, geothermal well.
Claim 30	
30	Apparatus according to claim 9, comprising a plurality of injection horizontal, geothermal wells for one production horizontal, geothermal well.

Claim 31	
31	Apparatus according to claim 9 comprising a plurality of horizontal injection wells and a plurality of horizontal production wells spaced horizontally and vertically.
Claim 32	
32	Apparatus according to claim 9 wherein all the water and make-up water is supplied from an external source.
Claim 33	
33	Apparatus according to claim 9 wherein part of the water circulating is from the reservoir and only make-up water is from an external source.
Claim 34	
Preamble 34	Method for assuring the flow of geothermal fluid from at least an injection well to at least a production well, which comprises the following steps:
34-I	Providing a first, horizontal, geothermal well, which is connected to said injection well;
34-II	Injecting water into said injection well;
34-III	Providing a second, horizontal, geothermal well, which is connected to said production well;
34-IV	Recovering geothermal fluid from said production well;
34-V	Generating a water density difference and a pressure difference between said first horizontal well and said second horizontal well by providing a fluid pump connected to said second horizontal well; and
34-VI	Inducing geothermal fluid into said second horizontal geothermal well from the geological layer because of buoyancy of the water and

	the pressure difference between the horizontal injection and horizontal production wells.
Claim 35	
35	Method according to claim 1, wherein the geothermal fluid is one of water, steam and a combination thereof.
Claim 36	
36	Apparatus according to claim 9, wherein the geothermal fluid is one of water, steam and a combination thereof.
Claim 37	
37	Method according to claim 34, wherein the geothermal fluid is one of water, steam and a combination thereof.
Claim 38	
38	Apparatus according to claim 22 wherein said combined cycle geothermal power plant includes a steam turbine for expanding geothermal steam from said geothermal fluid and producing electricity, a vaporizer to which the expanded steam is supplied to condense and vaporize the working fluid, which working fluid is supplied to a turbine where it expands thereby driving an electric generator for producing electric power.