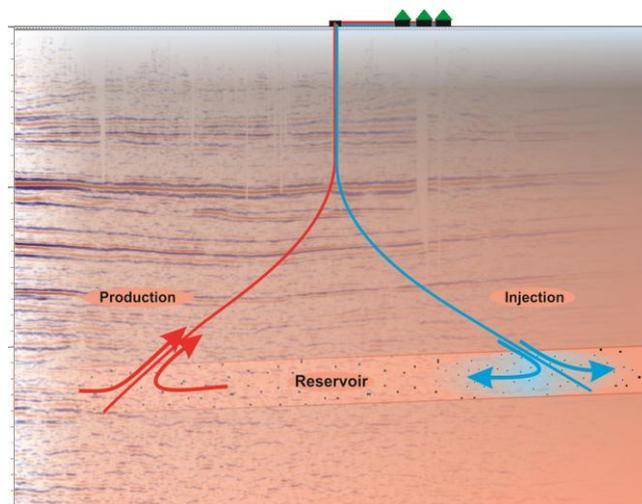




## **Geothermal Exploration**

Amsterdam Petroleum Geoscience (AmsterdamPG) provides, in addition to its petroleum services, alternative complementing exploration services. Abandoned petroleum-scale wells can be exploited for their geothermal capacity. Future petroleum-scale wells can be viewed in this same manner. Geothermal energy is an upcoming source of power, combining many aspects of clean and durable energy; zero CO<sub>2</sub> emission, no polluting substances, long-term independence of international energy prices and steady, directly available heat. Exploration of reservoirs, static field appraisals, drilling of wells and production of fluids through wells is very similar for petroleum and geothermal systems.

AmsterdamPG has a strong track record in geothermal exploration. It has completed several large geothermal projects in the Netherlands. These projects spanned all phases of geothermal exploration and production including seismic processing & imaging, seismic interpretation, well-log evaluation, reservoir model building and simulation, well-design, drilling supervision and production tests. The end result was an operational pair of geothermal wells delivering a continuous flow of hot water.



Thermal water can either be the primary target of exploration or it can be a by-product of petroleum production. In the first case, a classic development similar to a petroleum discovery can be followed. AmsterdamPG provides a comprehensive package including the whole process from initial exploration and appraisal to drilling and production. In the second case, AmsterdamPG consults on innovative methods of producing and using geothermal water for petroleum systems. For example, thermal water underlying hydrocarbon volumes can be extracted from one (modified) well, its heat extracted, and can then be injected into a neighbouring well to enhance petroleum production. Another opportunity is to employ one-well systems, whereby plugged/abandoned wells are modified to passively or actively circulate water to high-temperature depths. AmsterdamPG has the experience and know how to advise on the innovative uses of geothermal energy.